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TRANSACTIONS

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OF THE

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OF

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FOR THE YEAR M.DCCC.XLI.

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MEDICAL AND PHYSICAL SOCIETY

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TRANSACTIONS

1841

TRANSACTIONS

OF THE

MEDICAL AND PHYSICAL SOCIETY

OF

BOMBAY.

1841.

Article I.

Experiments illustrative of the Physiological effects of Calomel on the Gastro-intestinal mucous membrane of dogs.

By J. Murray, Esquire.

Presented February, 1841.

The following experiments, which have been prosecuted at intervals of leisure during the last two years, were undertaken for the purpose of determining the physiological effects of calomel and other mercurial preparations on the alimentary canal of dogs, and of thence endeavouring to deduce their probable therapeutic operation on the human species.

I am fully sensible of the objection that may be taken to such experiments, on the ground of the possible diversity of action of medicinal agents on the lower animals, as compared with their operation on man. This objection, however, probably applies with less force to experiments on dogs than to those on any other animals. Their diet is very analagous to that of man, and the numerous experiments of Orfila appear to have established, with a very few exceptions, a similarity of effect from the administration of poisonous agents. We are probably, therefore, entitled to assume, that whatever dissimila-

rity of action may be exerted by mercurial preparations on man and on dogs, will be a difference in degree, not in kind.

There is another and a more important objection, which may be urged against the utility of these and similar experiments. I allude to the different effects on the living system of substances administered in a state of health and of disease. Hence their therapeutic qualities cannot always be correctly ascertained, though in many instances they may be safely inferred, from their physiological operation.

The considerations, which have now been stated, necessarily tend very materially to lessen the practical utility of the following experiments, and probably to render them unworthy of being submitted to the Society. But, should they serve no other useful purpose, they may perhaps be considered to possess the negative merit of testing the accuracy of some similar experiments performed by Mr. Annesley, which, having been extensively applied by their author to the treatment of Indian diseases, have probably exerted a considerable degree of influence on medical practice in this country.

The operation of mercury is stated by writers on materia medica, to be that of a general stimulant, exerting its action more especially on the glandular and absorbent systems, and promoting the secretions of the liver, bowels, skin, and salivary glands.* But, so far as I know, the direct anatomical effects of calomel on the capillary circulation of the gastro-intestinal mucous membrane had not been made the subject of experimental enquiry until Mr. Annesley instituted some experiments on dogs in 1823, from the results of which he drew the following inferences; 1st. That the natural and healthy state of the stomach and intestinal canal in dogs is that of high vascularity.—2d. That calomel, when administered in large doses, diminishes the vascularity of the mucous surface of the stomach. —3d. That it excites the arterial capillaries in the mucous coats of the colon.—4th. That it attenuates and detaches the mucous secretions from the intestinal surfaces to which they adhere.†

* Murray's Materia Medica, 3d Ed. I 195.—Thomson's London Dispensatory, Art Hydrargyrum

† Annesley's Sketches of Indian Diseases, 395 397, 400 405

The results of these experiments are considered by Mr Pereira,* to be so improbable, that without further evidence he refuses to admit their accuracy; while, on the other hand, they are quoted by Dr. Copland as having "determined a most important fact," and as having "explained the results of clinical observation."† From the existence of so remarkable a discrepancy of opinion on the subject between two principal authorities in therapeutics and practical medicine, the theory of the local operation of calomel may be considered as still open for further investigation.

While I append to this paper a detailed account of the experiments which I have recently instituted on this subject, in the order and form in which they were originally made and recorded, it will be sufficient to introduce here a tabular analysis of them, commencing with those intended to illustrate the natural appearance of the organs, and arranging the others according to the quantities of calomel given in each instance, but retaining the original numbers so as to admit of a ready reference to the more detailed account.‡

It will be observed that the dogs were put to death in three different ways — by hanging, drowning, and shooting in the head. The first of these modes of death, from its tendency to produce vascular congestion, would not have been resorted to, had it not been the one adopted by Mr. Annesley, the verification of whose experiments was one of the objects which I had in view. Care was taken that the dogs should not be killed during the process of digestion.

* Pereira's Lect. on Mater. Medic. Medical Gazette, xviii. 468.

† Copland's Dict. of Pract. Medicine, Art. dysentery. I. 731.

‡ I acknowledge, with pleasure, my obligations to Dr. Waller for his kind assistance in conducting several of the experiments referred to.

A Tabular Synopsis of Fifteen Experiments on Dogs.

Number of Experiment.	Quantity of Alcohol taken.	Action during life.	Mode of death.	Appearances on Dissection.				
				Stomach.	Small Intestines.	Large Intestines.	Liver and Gall Bladder.	Other Organs.
I.	None.		Hanging.	Pale coloured externally. Internally much corrugated, and of a pale greyish-white colour; muscular tunic considerably thicker than in the human subject. Cavity nearly empty.	Externally pale coloured. Mucous membrane pale and smooth. Canal firm and contracted. Cavity empty.	Externally pale coloured. Mucous membrane pale, throughout. Canal firm and contracted. Somedry feculence in cæcum.	Liver of deep red colour, and emitting, when incised, a considerable quantity of blood. Gall bladder distended with thin limpid bile.	Spleen of a dusky red colour, with a milky tinge, on its upper surface.
II.	None.	Evacuations of dark grey colour.	Hanging.	Externally pale, with a very slight rose tinge. Cavity containing some yellow adherent bilious-looking fluid; much corrugated longitudinally; mucous membrane of pale greyish colour.	Externally pale, with a very slight rose tinge. Canal firm and contracted. Duodenum containing a good deal of yellow bilious-looking fluid; mucous membrane checquered with numerous, irregular, elevated, dusky red patches. Mucus in jejunum; red patches, fewer, smaller, and less elevated than in duodenum. Ileum of greyish colour, and containing mucus.	Externally pale, with a very slight rose tinge. Canal firm andcontracted Cæcum, colon and rectum, filled with thin, dark feculence, and presenting a few reddened streaks.	Liver as in Experiment i. Gall bladder distended with thin darkish coloured bile.	Spleen as in Experiment i.
VIII.	None.		Drowning.	Externally of a very pale rose tint. Cavity empty. Internal surface longitudinally	Externally of a very pale rose tint. Bowel contracted and firm. In upper part of duodenum a small quantity of an orange co-	Externally of a very pale rose tint. Bowel contracted andfirm. Somedark	Liver a shade lighter than in the preceding Experiments. Gall blad-	Spleen considerably enlarged and softened.

				corrugated, and of a pale lilac colour but white and smooth for about an inch and a half around the pylorus.	lented frothy fluid, the lower portion of it looked like thick congee of a milky colour. Mucous membrane generally pale coloured, with irregular, elevated, dusky red patches. Mucous surface of jejunum and ileum like that of duodenum, with less marked patches. Jejunum empty. Ileum containing a little orange coloured frothy fluid.	feebleness in colour, its inner surface of pale greyish colour with longitudinal corrugations less numerous and prominent than those of stomach.	der containing a little dark thin bile.	
XII.	Four doses of 5 grains each.	Vomited an hour after the first and third doses; several dark evacuations.	Shooting in the head.	Externally of a pale pinkish colour, containing half an ounce of orange coloured frothy fluid. Inner surface longitudinally and densely corrugated. Capillaries of the projecting convex border of corrugations minutely injected; remaining portion of a pale lilac colour.	Externally of a pale pinkish colour. Duodenum containing a viscid dark orange coloured frothy fluid. Inner surface presenting here and there dusky red stains of what appeared a sanguineous extravasation beneath which membrane pale. Mucous membrane of jejunum of a pale greyish colour, with a few capilliform streaks. Ileum of a greyish colour with a few injected streaks, and a slight sanguineous exhibition. A small quantity of dark green frothy fluid in upper part.	Externally of a pale pinkish colour. Inner surface longitudinally corrugated and minutely injected.	Liver of a deep mahogany colour and not bleeding on incision. Gall bladder filled with very dark green liquid bile.	Spleen of usual appearance. Large vessels and mesentery much injected.
XIII.	Four doses of 5 grains each.	Vomited an hour after the last dose. One dark evacuation.	Shooting in the head.	Externally greyish white with a slight pink hue, containing a pale dark coloured, viscid, mucoform fluid. Its mucous membrane presenting a pale grey blanched appearance.	Externally greyish white, with a slight pink hue. Upper portion of duodenum containing a little of the same fluid as in the stomach, with a very slight admixture of bile; lower portion containing an ash coloured viscid fluid. Inner surface of duodenum and jejunum pale grey. That of ileum generally pale, with numerous small detached patches of diffused blood in upper portion.	Externally greyish white, with a slight pink hue, containing a fluid similar to that in duodenum. Mucous surface pale and longitudinally corrugated.	Liver of a light mahogany colour, and giving out liquid blood, on incision. Gall bladder filled with liquid dark green bile.	Spleen of usual appearance.

Number of Experiment	Quantity of Calomel (gr. 480 = 1)	Action during life.	Mode of death.	Appearances on Dissection.				
				Stomach.	Small Intestines.	Large Intestines.	Liver and Gall Bladder	Other organs.
XIV.	Four doses of 10 grains each.	Once purged	Shooting in the head	Externally greyish-white with a faint red tinge. Containing some half digested rice. Inner surface longitudinally and densely corrugated, and of a pale lilac colour.	Externally greyish white, with here and there a faint red tinge. Duodenum containing a little orange-coloured frothy fluid: its mucous surface of a greyish white colour. Jejunum of the same colour, with here and there a little sanguineous extravasation on its inner surface. Ileum containing thin half digested feculence: its mucous membrane of a faint rose tint.	Externally greyish white, with a faint red tinge. Colon longitudinally corrugated. The upper portion of its mucous membrance presenting a large patch of dotted bright red appearance: the lower portions greyish-white. Thin feculence in cæcum and rectum.	Liver of a deep mahogany colour, and emitting a small quantity of blood on incision. Gall bladder containing dark liquid bile.	Spleen of natural appearance. Mesenteric trunks injected. Bladder contracted & empty; its mucous membrane of a faint rose tinge.
X.	Three doses of 15 grains Pil. Hydr. each.	Dark coloured dejections.	Drowning.	Capillary injection of external surface, containing a little soup. Internal surface longitudinally corrugated, and of a pale lilac colour, assuming a pinkish hue on washing and exposure to the air.	Capillary injection of external surface. Canal firm and contracted. Duodenum containing an orange coloured, slightly frothy gelatinous fluid. Internal surface presenting a uniform fleshy granular like appearance, resembling a raw excoriated surface. Over the lower two thirds, six or eight circular patches, of the size of a sixpence, with raised borders, and their inner area on the same level with the surrounding surface. In jejunum and ileum irregular fleshy patches; rest of the surface pale and smooth.	Capillary injection of external surface. Canal firm and contracted, containing a little dark soft feculence. Inner surface of colon irregularly and closely corrugated and of a uniform bright red colour.	Liver of the same colour and appearance as before. Gall bladder distended with dark bile.	Spleen of the same appearance as before. Capillary injection of the omentum and mesentery. Urinary bladder much distended; and the capillaries of its mucous membrane minutely injected.

V.	Three doses of one scruple each.		Hanging.	Externally pale coloured, with faint reddish tinge, containing undigested rice. Inner surface corrugated, and of a uniform bright red tinge as in Experiment ii.	Externally pale, with a faint reddish tinge. Canal firm and contracted. Duodenum empty: its mucous membrane of greyish colour, with numerous irregular, elevated, dusky-red patches. Similar but paler, patches in jejunum, which contained yellow bile. Still fewer, smaller, and less deeply coloured patches in Ileum.	Externally pale with a faint reddish tinge. Canal firm and contracted. Cæcum and colon full of thin greenish feculence. Inner surface of light greyish colour with a very faint reddish tinge and corrugated longitudinally.	Liver as described in Experiment i.	Spleen as described in Experiment i.
XI.	Three doses of two drachms each.	Greenish and dark dejection. Vomiting half an hour after each dose.	Drowning.	Externally very slightly injected Containing 2 spoonfuls of dark forthy fluid. Innersurfacecorrugated longitudinally, and of a deep red colour, particularly on projecting borders of corrugations, which appeared as if dipt in blood.	Externally pale. Bowel contracted, particularly jejunum and ileum. Duodenum containing orange-coloured fluid. Inner surface presenting streaks, and irregular patches, of a deep red colour, apparently caused by a sanguiform effusion, beneath which the membrane pale, thin, and entire. Inner surface of jejunum and ileum pale generally, with smallpatches smeared with a grumous effusion, the corresponding portions of peritoneal coat livid.	Externally pale. Bowel contracted. Inner surface of colon longitudinally and thinly corrugated, of a deep red colour, with a smearing of effused blood on projecting borders of corrugations.	Liver of usual appearance Gall bladder distended with unusually dark bile.	Spleen of usual appearance, considerable injection particularly of the larger vessels, of omentum and mesentery.
II.	Two doses of one drachm each.	Dark coloured liquid motions: vomiting.	Hanging.	Externally of a reddish tinge, without much injection of the large vessels. Cavity containing a good deal of yellow frothy bilious looking matter, mixed with some transparentgelatinous substance. Internal surface much corrugated longitudinally, and of a uniform bright-red tinge.	Externally of a reddish tinge without much injection of the large vessels. Canal firm and contracted. Duodenum containing a great quantity of dark-bile. Inner surface of a red tinge, with raised patches of a darker red, which proved to be a sanguineous or sanious effusion beneath which the membrane was entire but reddened. Less corrugated than stomach. Ileum empty, more corrugated and less reddened than duodenum and jejunum.	Externally of a reddish tinge, without much injection of the larger vessels. Bowel firm and contracted. Cæcum and colon slightly corrugated internally and of an intensely red colour, with patches of red sanious secretion as in duodenum. Rectum of a less bright red colour. No feculence.	Liver of a deep red colour, and giving out, when cut, a considerable quantity of liquid blood. Gall bladder distended with thickish blackish coloured bile.	Spleen of a dusky red colour.

Number of Experiments	Quantity of calomel given.	Action during life.	Mode of death.	Appearances on Dissection.				
				Stomach.	Small Intestines.	Large Intestines.	Liver and Gall Bladder.	Other organs.
IV.	One drachm.	Evacuations dark coloured, but more consistent than in Experiment ii.	Hanging.	Externally of a reddish tinge, containing a little unadherent bile; much corrugated longitudinally, and mucous membrane of a uniform intensely red colour, particularly on the projecting part of the corrugations.	Externally reddened (without injection of the large vessels) firm, and contracted. Duodenum containing a little bile, and presenting the same redness and patches of sanguineous extravasation on the mucous surface, as in Experiment ii. Jejunum and ileum slightly reddened.	Externally reddened (without injection of the large vessels) firm and contracted. Mucous membrane of colon reddened, but less so than in Experiment ii. A good deal of thin dark feculence in cæcum and colon.	Liver of dark red colour, and not emitting so much blood as in Experiment i, ii, and iii. Gall bladder distended with thin darkish bile.	Spleen of a dusky red colour.
VII.	Two doses of one drachm each.	Several thin motions the first yellowish the other dark. First dose rejected. Retention of the 2nd dose doubtful.	Drowning.	External appearance as in Experiment vi. containing a small quantity of thin pale, orange coloured frothy fluid. Mucous membrane of a pale grey colour.	External appearance as in experiment vi. Duodenum lined with a whitish adhesive fluid. Inner surface of the whole of the small intestines presenting several elevated, irregular dusky-red patches, not removable with handle of scalpel, the rest of the surface of a greyish pale red colour.	External appearance as in Experiment vi. Empty longitudinally corrugated. Mucous surface of the same colour as the stomach.	Liver as in Experiment vi. Gall bladder partially distended with very dark-coloured bile. Ductus choledochus permeable.	Spleen as in Experiment vi.
XV.	Three doses of one drachm each.	Vomited repeatedly after each dose. Several times purged after first dose.	Shooting in the head.	Minute ramiform injection of the peritoneal coat, containing about an ounce of orange coloured, frothy fluid. Internal surface longitudinally corrugated, and of	Externally of reddish-white colour, firm and contracted. A small quantity of orange frothy fluid in upper part of duodenum; mucous membrane injected in streaks, and presenting several bleeding points. Remainder of duodenum and	Externally of a reddish white colour, firm and contracted. Cæcum containing a muco-serous fluid, and minutely and vividly injected. Colon	Liver of mahogany colour, soft consistence and bleeding freely on incision. Gall bladder filled with dark liquid bile.	Increased vascularity both of capillary and large vessels of the omentum, mesenteric trunks injected. Kidneys emitting an unusually large quan-

				a uniform bright red tint, with a few bleeding points on the projecting borders of corrugations.	the jejunum coated with very viscid congee-like mucous beneath which the mucous surface presented irregular, elevated dusky-red patches, with here and there small patches of extravasated florid blood. Ileum containing muco-sanguineous fluid, with capillary injection of part of its surface.	densely corrugated, longitudinally in the upper portion, and transversely in the lower. Whole of its inner surface of a uniform and intensely red colour. A little muco-serous fluid in rectum.		tity of blood on incision. Bladder empty and contracted; uniform bright capillary injection of its mucous membrane.
VI.	Two doses of two drachms each.	Dejections dark coloured. Salivated (first dose rejected.)	Drowning	Externally of a pale rose colour, containing about 3 oz. of dark yellowish green frothy fluid. Inner surface presenting longitudinal corrugations, the raised surfaces of which had a bright red injected appearance. Surface between the corrugations of a palish lilac grey, and here and there having a granulated appearance.	Externally of a pale rose colour. Bowel firm and contracted. Duodenum lined with a slightly tenacious deep orange coloured frothy matter. The inner surface presented an irregular elevated reddened appearance, partly caused by a sanguineous or sanious secretion, beneath which the membrane appeared entire and of a pale rose-tinge. In the ileum the fluid was less abundant, darker coloured and more consistent. Surface of jejunum and ileum less reddened than duodenum.	Externally of a pale rose colour. Bowel firm and contracted. Colon irregularly corrugated, and containing a small quantity of the same dark coloured fluid as in the ileum. Mucous membrane injected, but less so than the stomach.	Liver of a dark mahogany colour, and emitting, when cut a small quantity of liquid blood. Gall bladder partly distended with dark greenish black bile.	Spleen of a bluish red colour.
IX.	Two doses of two drachms each.	Loose dark evacuations with slime and a little blood.	Drowning	Externally of a pale pink colour, containing a considerable quantity of frothy orange coloured fluid. Corrugated longitudinally. Mucous membrane of central portion presenting a bright injected appearance, particularly on convex surface of corrugations, which looked as if blood had been effused on them: rest of the membrane had a rose tint.	Externally of a pale pink colour. Upper portion of duodenum containing an orange coloured fluid, in middle portion a muddy serous-like fluid with coagulated flakes; and lower portion coated with a sanguineous or sanious fluid, beneath which the membrane was pale and entire. On inner surface numerous dusky elevated patches. Jejunum empty and pale Ileum lined, successively, with a sanguineous, sanious, and grumous fluid.	Externally of a pale pink colour. On inner surface of colon, longitudinal, sharpened corrugations the convex surface of which was slightly injected.	Liver of the same colour, consistence and size as in former experiments. Gall-bladder very much distended with dark bile: ductus choledochus quite permeable.	Spleen of the same colour, and size as in former experiments.

The following conclusions appear to be deducible from the preceding series of experiments.

1st. When administered to dogs in doses of from five to thirty grains, calomel occasions, in a less or greater degree, a preter-natural afflux of blood to the minute arteries and capillaries of the gastro-intestinal (more particularly the gastric and colic) mucous membrane, imparting to that tissue a capilliform, punctiform, or uniform red tinge. This increased vascularity, which is slightly marked after doses of five and ten grains (Experiments xii, xiii, and xiv,) becomes more perceptible in doses of twenty and thirty grains, and is accompanied with more or less sanguineous effusion on the mucous surface, either in dots (like bleeding points) or in small streaks or patches (Experiments v, xi.)

2d. In the abovementioned doses it increases the flow of bile into the duodenum; and

3d. It increases the secretion from the intestinal mucous follicles and serous exhalants.

4th. When administered in doses of one, two, and three drams, it produces, in addition to a greater amount of the preceding effects, capilliform injection of the peritoneal coat of the stomach and bowels, and alters, as well as increases, their internal secretions, occasioning a sanguineous, or dark grumous, or sanious, or sero-albuminous effusion on the inner surface of the bowels, particularly of the colon. (Experiments ii, iv, vii, xv, vi, ix.) In one experiment (ix) all these different kinds of secretion (resembling the appearances in acute dysentery) were found in the small intestines of the same dog, and must have been of recent formation, as they had not passed into the colon. Under the influence of these doses, also, bile flows into the cavity of the stomach.

These results appear to me conclusively to establish, that calomel excites and increases (and, under certain circumstances, modifies) the physiological actions of the minute arteries, capillaries, and secretory vessels of the gastro-enteric mucous membrane; and that these effects are in some degree proportioned to the largeness of the dose administered.

The apparent discrepancy between the results of these experiments and those obtained on a more limited scale by Mr. Annesley in regard to the stimulant or sedative action of calomel on the capillary blood vessels of the gastric mucous membrane (for there is an exact correspondence of result regarding its action on the colon) appears to

be partly attributable to that author's having inferred, from two experiments, that the natural and healthy state of the stomach and bowels is that of high vascularity — an opinion which is opposed, I believe, to that of almost all anatomists, and is directly at variance with Experiments i, iii, and viii. The discrepancy in reference to its operation on the intestinal mucous secretion is perhaps more a difference of interpretation than any real discrepancy of results— Mr. Annesley having attributed to calomel the property of chemically dissolving and detaching the mucus from the surface to which it adheres, while I have seen reason to believe that it stimulates the mucous and serous exhalants to a preter-natural increase of their secretion, which combines with, and dilutes, the inspissated mucus previously lodged in the bowels.

I will not venture to draw any therapeutic deductions from these experiments further than to express my belief that they will be found not opposed to clinical observations. Admitting the direct stimulant or irritant operation of calomel on the healthy gastro-enteric mucous capillaries to have been established, it by no means follows that this remedy should not exert an antiphlogistic or contra-stimulant action on these vessels when preternaturally dilated and distended by disease. On the contrary, such a therepeutic effect would be accordant with the analogous operation of other remedies,* and would admit of a satisfactory explanation. To say nothing of the indirect antiphlogistic effect resulting from an increase of the different abdominal secretions, calomel may be supposed to aid in re-establishing the healthy contractility of the distended capillaries, whereby their diameters will be lessened and their morbid vascularity reduced — an effect which will be greatly facilitated by combination with such remedies as directly allay the nervous irritability of the affected tissues.

If it be asked what practical benefit can result from the discussion of the theory of the direct and primary operation of calomel, provided its ultimate agency in subduing inflammatory action in the mucous membrane of the stomach and bowels be admitted — it may be answered, that, as mercury sometimes removes, sometimes aggravates,

* An analogous action may be traced in tartar emetic, which (as is well known) has a powerful effect in controlling pulmonary inflammation, and yet, when given in poisonous doses, has been found by Magendie to produce, generally inflammation, and sometimes even hepatization, of the lungs. Christison on poisons. 2d Ed. 18. The effect of disease in modifying the action of other medicines is well known

these morbid affections, a knowledge of its mode of operation might enable us to reconcile these discrepancies, and thus give greater precision to its administration. A single illustration will shew its bearing on medical practice.

If calomel in large doses (as contended for by Mr. Annesley) possess a direct sedative effect on the gastric capillaries, or if (in the words of Dr. Copland*) it directly "diminishes vascular action in the villous coat of the stomach," it follows, that, in all cases of inflammation, or of simple increased vascular action, in that tissue, large doses of this medicine must always be productive of more or less benefit, and cannot possibly be prejudicial: — but if, on the other hand, its physiological effect be to excite or increase arterial and capillary action, it is probable that the more acute forms, or the earlier stages, of the affections referred to, would be aggravated, rather than benefited, by large doses of calomel, until the gastric capillaries should be previously depleted, and perhaps their increased action in some measure subdued.† With these few observations I dismiss the subject in the hope that it may engage the attention of other members of the Society, possessing better opportunities and qualifications for carrying it out. The subject is one of high importance to practical medicine; and its further prosecution might, at the same time, tend to throw some light on the obscure and disputed subject of the theory of inflammation. The few and imperfect experiments now submitted to the society, in conjunction with clinical experience, tend to favour the doctrine recently advocated by Dr. Carswell, that inflammation presents two successive stages, each of which is referrible to opposite conditions of the physiological properties of the affected tissue.‡

It need scarcely be added, in conclusion, that these experiments are not calculated to throw any light on the remote agency of mercury in controlling disease in organs and tissues with which it does not come into immediate contact.

* Copland's Dict. of Pract. Med. ii. 337.

† It is worthy of notice that Mr. Annesley administers large doses of calomel with equal freedom in inflammatory affections of the stomach and of the colon; although he labours to prove that it *increases* vascular action in the *former*, and *diminishes* vascular action in the *latter*, organ.

‡ Carswell's Illustrations of the elementary forms of disease. Fasc : xii

DETAILED STATEMENT OF THE EXPERIMENTS MADE WITH CALOMEL.

I. — On the 25th December 1837, a healthy looking dog, that had been confined for two days and fed on weak broth was hanged, and opened by me a quarter of an hour after. No broth was given after the morning of the 24th.

Liver of deep red colour, and emitting, when incised, a considerable quantity of liquid blood. Gall bladder distended with thin limpid bile. Spleen of a dusky-red colour, with a milky tinge on its upper surface. Stomach and bowels pale coloured, externally: the latter contracted and having a firm thickened feel throughout. On opening the stomach it was found nearly empty, very much corrugated, and of a pale greyish colour, and its muscular tunic considerably thicker than in the human subject. Small intestines empty, with the exception of some small tape worms; mucous membrane pale and smooth. Some dry feculence in the cæcum: mucous membrane of the colon pale throughout.

Remarks.—Mr. Annesley states, as the result of two experiments, that "the natural and healthy state of the stomach and intestinal canal is high vascularity."* In the dog which formed the subject of the above experiment, the mucous membrane throughout the whole of the alimentary canal was of a pale greyish white colour.

II. — On the 23d December 1837, at 11 o'clock A. M. I gave a healthy looking dog 3i. of calomel in the form of pill. About an hour and a half after, he vomited what appeared to be the calomel; and in the course of the day had two motions of natural appearance. Had no food. On the following day at 11 A. M. I gave another pill containing the same quantity of calomel. Did not vomit, and had two or three dark coloured and more liquid motions. Gave some broth in the evening.

On the 25th December at 11 A. M. (forty-eight hours after taking the first dose, which appeared to be rejected, and twenty-four hours after the second.) I had the dog hanged, and examined him a quarter of an hour afterwards.

Liver of deep-red colour, and giving out, when cut into, a considerable quantity of liquid blood. Gall bladder distended with a thickish blackish-coloured bile. Spleen of a dusky red colour. Stomach and bowels presenting externally a reddish tinge, without much injection of the large vessels. Bowels firm and contracted throughout their course. Stomach contained a good deal of yellow frothy bilious-looking matter, firmly adherent to the upper surface, mixed with some transparent gelatinous substance. Muscular coat thick as in the former experiment; internal surface much corrugated longitudinally; and the mucous membrane (particularly the central and pyloric portion) of a uniform bright red tinge. Duodenum less corrugated, containing a great quantity of dark bile, and its mucous membrane of red tinge, with here and there raised patches of a darker red, which had a granular appearance when first seen, but which proved to be a sanguineous or rather a sanious secretion

* Sketches of diseases of India, page 397

which was easily scraped off with the back of the scalpel, leaving the membrane entire but reddened underneath. Ileum containing two or three small tape worms, but otherwise empty, more corrugated and less reddened in colour than the duodenum and jejunum. Cæcum and colon slightly corrugated internally, and of intensely red colour, with patches of the same red sanious secretion, as observed in the duodenum. Rectum of a less bright red colour. No feculence in any part of the canal.

Remarks. — Mr. Annesley, from four experiments, draws the conclusion, that "the first effect of calomel, in large doses, is to diminish vascularity" — that "its operation is directly the reverse of inflammatory."* A very different result is shewn in the foregoing experiment. The whole internal surface both of the stomach, and of the small and large intestines, was in a state of remarkable vascularity : while the sanious secretion on the surface of the duodenum and colon, and indeed the whole appearance of the large bowel, exactly resembled what we observe in acute dysentery. The increased flow of bile into the stomach and duodenum is worthy of remark. That its presence was not the cause of the morbid vascularity may be inferred from the fact, that the greatest degree of vascularity was in the colon, which contained no bile.

III. — On the 29th December, 1837, a healthy looking dog that had been confined for two days, and fed on broth, was hanged and opened half an hour after. Orders were given that no food should be given after the evening of the 28th : but there is reason to think that food was given subsequently with the view of putting a stop to its howling. Motions of dark grey colour. Liver and spleen as in Experiment i. Gall bladder distended with thin darkish-coloured bile. Stomach and bowels externally pale, with a very slight rose tinge. Bowels firm and contracted. The stomach contained some yellow bilious-looking fluid, which adhered tenaciously to the lining membrane. It was much corrugated longitudinally : and mucous membrane of pale greyish colour. Duodenum contained a good deal of what appeared to be yellow bile: its mucous membrane checquered throughout with numerous dusky red patches of irregular figure, sensibly elevated above the surrounding surface, and giving it a rugous appearance. Viscid mucus in the jejunum, the lining membrane of which presented a few patches, smaller and less elevated than in the duodenum. Ileum of greyish colour, and containing viscid mucus. Cæcum, colon and rectum, filled with thin dark feculence, and presenting a few reddened streaks.

Remarks. — The stomach presented the same appearance as in Experiment i. excepting that it contained strongly adherent bile. The rugous appearance of the duodenum and jejunum was not remarked in the former experiment.

* Loc. Cit. 395, 397.

VI. — On the 28th December 1837, at 11 o'clock A. M. I gave to a healthy looking dog (which had been confined for a day) 3i. of calomel in pill. Gave a little broth in the evening. Bowels were twice opened. Motions dark coloured, but more consistent than in Experiments vii. On the 29th December at 11 A. M. (twenty-four hours after taking the calomel) the dog was hanged, and opened half an hour after.

Liver of dark red colour, and not emitting so much blood on incision, as in Experiments i, ii, and iii. Gall bladder distended with thin darkish bile. Spleen of dusky red colour. Stomach externally presenting a reddish tinge. Bowels reddened (without injection of the large vessels) firm, and contracted. Stomach containing a little unadherent bile, and much corrugated longitudinally : and mucous membrane of a uniform intensely red colour, particularly on the projecting part of the corrugations. Duodenum containing a little bile, and presenting the same reddened appearance, and patches of sanguineous secretion, described in Experiment ii. Jejunum and ileum containing tape worms, and slightly reddened. Mucous membrane of the colon, though reddened, much less so than Experiment ii. A good deal of thin dark feculence in the cæcum and colon.

Remarks. — In this experiment the mucous membrane of the stomach was of a more intensely red colour than in Experiment ii, but there was much less reddening of the colon. The calomel acted less on the bowels (the motions being more consistent) than in the former experiment.

V. —On the 12th January 1838, at 11 A. M. I gave a dog 3i. of calomel in pill, which was repeated, at the same hour, on the 13th and 14th, and he was killed by hanging at 11 A. M. on the 15th. Body examined half an hour after. Some soup given on the evening of the 12th and 13th.

Liver and spleen, as described in Experiment i. Bowels firm and contracted, and (together with the stomach) pale coloured, with a faint reddish tinge. Stomach containing a quantity of undigested rice; its inner surface corrugated, and of a uniform bright red tinge, as in Experiment ii. Duodenum empty, its inner membrane of a greyish colour, with numerous irregular, dusky red patches raised above the surrounding surface. Patches of similar size, but of a paler colour, in the jejunum, which contained a good deal of yellow bile. A very few, smaller, and less deeply coloured, patches in the ileum. Cæcum and colon full of thin greenish coloured feculence, its inner surface of light greyish colour, with a very faint reddish tinge, and corrugated longitudinally.

Remarks. — The stomach in this experiment, presented the same appearance as in Experiment ii. and iv. The small intestines presented similar patches to those described in Experiments iii. and the appearance of the colon was also similar, with the addition of longitudinal corrugations.

VI.—On the 16th January 1839, at 11 A. M. I gave to a healthy looking dog (which had been kept from food during the preceding night) 3ii. of calomel in a little moistened bread, which it rejected in about half an hour. On the 17th at 11 A. M. repeated the above dose, which was retained. 18th had one dark coloured motion. Yesterday and to-day gave it a small quantity of weak broth. 19th It appeared to be salivated, there being a good deal of salival discharge from the mouth. At 11 A. M. (forty-eight hours after the second dose of calomel) it was killed by drowning, and inspected half an hour after.

Liver of a dark mahogany colour, and emitted, when incised, a small quantity of liquid blood : spleen of a bluish red colour, stomach and bowels of pale rose colour externally ; the latter firm and contracted. Stomach somewhat distended, and containing about three ounces of a dark yellowish green frothy fluid. Muscular coat thick. The internal surface of the stomach presenting longitudinal corrugations, the raised surface of which had a bright red injected appearance, more especially in the central portion of the stomach, the surface between the corrugations of a palish lilac-grey, and here and there having a granulated appearance. Mucous membrane, within an inch and a half of the pyloric orifice, smooth and but very slightly injected.

Duodenum lined with a slightly tenacious deep orange coloured frothy (bilious looking) matter, on wiping off which, the inner surface of the bowel presented an irregularly elevated reddened appearance, part of which appeared to be caused by a sanguineous or sanious looking fluid, which could be scraped off by the handle of the scalpel, leaving the mucous membrane underneath entire and of a very pale rose tinge. Jejunum was filled with same kind of fluid, but thinner and less adhesive, and of lighter colour. In the ileum the fluid was less abundant, darker coloured, and more consistent. The surface of the jejunum and ileum less reddened in appearance than the duodenum. The colon irregularly corrugated internally, and containing a small quantity of the same dark coloured matter as in the ileum. Its mucous membrane injected, but in a less degree than that of the stomach. Gall bladder partly distended with dark greenish black bile.

Remarks. — We observe here the injected state of the mucous membrane of the stomach, as in Experiments ii, iv, and v. the sanguineous or sanious looking secretion on the surface of the small intestines, as in Experiments ii, and iv,—and the mucous membrane of the colon injected, as in Experiments ii, and iv.

VII. — On the 17th January 1839, at 11 A. M. I gave a healthy dog (which had been kept fasting during the preceding night) 3i. of calomel in moistened bread, which it rejected ten minutes after swallowing it. 18th at 11 A. M. I repeated the same dose, it passed several thin motions during the day the first yellowish, the others dark coloured. Gave it a little weak broth in the evening. 20th at 11 A. M. (twenty-four hours after last dose) it was drowned and examined half an hour after.

Liver, spleen, stomach, and intestine, presenting the same appearance externally as in Experiment vi Stomach contained a small quantity of thin pale orange coloured frothy fluid Mucous membrane of a pale grey colour. Gall

bladder partially distended with a very dark coloured bile, which could be easily pressed through the ductus communis choledochus into the duodenum. The duodenum lined with a whitish adhesive fluid. The inner surface of the whole of the small intestines, presenting several elevated, irregular, dusky red patches, not removable with the handle of the scalpel ; all the rest of the surface having a greyish pale red appearance. The mucous coat of the cæcum and colon of the same appearance as the stomach, with longitudinal corrugations, and empty.

Remarks. — This dog unfortunately was not watched, it is uncertain, therefore whether the second dose was retained or rejected ; and consequently no safe conclusions can be drawn from the appearance. The mucous membrane of the stomach, and colon was of pale grey colour ; and the small intestines presented the irregular, elevated, dusky red patches, remarked in almost all the preceding experiments.

VIII. — On the 26th January 1839, at 1 A. M. a healthy looking dog was drowned, after having been fed lightly for two days on broth. The body was examined immediately after.

Liver of healthy appearance, though its colour was a shade lighter than in the former experiments. Gall bladder containing a little dark thin bile. Spleen considerably enlarged and softened, so as to break down when pressed between the fingers. Stomach and bowels externally of a very pale rose tint, the latter contracted and firm. Stomach empty. Its internal surface longitudinally corrugated, and of a pale lilac colour, but white and smooth for about an inch and half around the pylorus. In the upper part of the duodenum was found a small quantity of an orange coloured frothy fluid, which towards the lower portion of this intestine assumed the appearance of thick congee, of a milky whitish colour. Mucous membrane of the duodenum generally pale coloured, but presenting in some parts irregular elevated dusky red granular patches, giving these portions of the bowel somewhat of a fleshy appearance. The mucous surface of the jejunum and ileum presenting the same appearance as that of the duodenum, except that the elevated patches were less marked. Jejunum empty, ileum containing a little orange coloured frothy fluid. Some dark feculence in the colon, the inner surface of which was of pale greyish colour, with longitudinal corrugations less numerous and prominent than those of the stomach.

Remarks. — Here we have 1st, The stomach longitudinally corrugated, and of a pale lilac colour. 2dly. The inner surface of the small intestines uncorrugated, and of a greyish white colour, with irregular, dusky red patches, very sensibly elevated above the surrounding surface, and giving a fleshy appearance to the portions of intestines thus affected. These patches were more numerous and better marked in the duodenum than in the jejunum and ileum. 3d. The mucous surface of the colon of a pale greyish colour, and pre-

senting longitudinal corrugations, which were smaller and more apart from each other than those of the stomach.

From Experiments i, ii, and iii, we may infer that the natural and healthy colour of the gastro-intestinal mucous membrane is greyish-white, with occasionally a faint lilac tinge on the gastric mucous surface. The corrugations of the stomach are numerous and disposed longitudinally : those of the colon and rectum are also longitudinal, but fewer in number, shapes, and less prominent. The inner surface of the duodenum (and more rarely, and in a much less marked degree of the jejunum and ileum) occasionally presents irregular dusky red, elevated patches or streaks, giving it a rugous appearance, the intervening portions being of the usual colour and consistence.

IX. — On the 24th January, at 11 A. M. gave a healthy dog 3iii. of calomel in soaked bread. Was sick about an hour after, and vomited what appeared to be a portion or the whole of the calomel. In the course of the evening had two or three loose dark evacuations intermixed with slime, and in one dejection there was a little bloody mucus. A little broth given. On the 25th, at the same hour, a similar dose of calomel was given in the same way. He vomited about a quarter of an hour after, a thin fluid apparently containing some of the calomel. In the course of the day had three or four dejections of the same colour and appearance, as on the preceding day. On the 26th at 1 P. M. the dog was killed by drowning, and inspected immediately after.

Liver and spleen of the usual colour, consistence, and size. Gall bladder very much distended with dark bile, and the ductus choledochus quite permeable, — stomach and bowels externally of a pale pink colour. Stomach contained a considerable quantity of frothy orange-coloured fluid : its inner surface corrugated longitudinally. The mucous membrane of the central portion of the stomach presented a bright injected appearance, more particularly on the convex surface of the corrugations, a few of which looked as if blood had been effused on them : — the rest of the surface had a rose tint. The upper portion of the duodenum contained an orange coloured frothy fluid — in the middle portion was found a considerable quantity of a muddy serous-like fluid (containing some coagulated flakes) which flowed readily from the intestine — and the lower portion was coated with a sanguineous or sanious looking matter, which could be readily wiped off by the handle of the scalpel, leaving the mucous membrane underneath entire and of a pale colour. The inner surface of the whole of the duodenum presented here and there the dusky elevated patches so frequently described. Jejunum empty and pale. The ileum lined with a fluid, which assumed successively a sanguineous, sanious, and grumous appearance. The colon longitudinally corrugated — the corrugations sharpened, and slightly injected on their convex surface.

Remarks. — The following points are deserving of notice in this experiment. 1st. The large quantity of bile in the gall bladder, and of bilious-looking fluid in the stomach, and upper part of duodenum

2d. The injected appearance of the inner surface of the central portion of the stomach, (as in Experiments ii, iv, v, and vi,) more particularly on the convex surface of the corrugations, a few of which looked as if blood had been effused from them. 3d. The contents of the small intestines. These presented successively the appearance of a muddy serous-like fluid, which flowed readily from the bowel — of pure blood — of a sanious looking matter — and of dark grumous blood. In short they resembled the contents of an unhealthy abscess. Similar appearances were observed in Experiments ii, and iv, but by no means so strongly marked. In fact, the contents of the small intestines, in the present experiment, exactly resembled the alvine dejections observed in the worst forms of dysentery. To what are we to attribute them? They were evidently of recent origin, for they had not found their way into the colon: and must, therefore have been the stimulant effect of the calomel on the secretory vessels of the intestinal mucous membrane. 4th. The corrugations of the colon injected in a less degree than those of the stomach.

X. — On the forenoon of the 1st February, 1839, gave a healthy dog (that had been confined from the preceding evening without food) fifteen grains of pilulæ Hydrargyri, and repeated the same quantity on the 2d and 3d. He was fed with boiled rice on the evening of the 1st and 2d, and had several dark coloured dejections. Was killed by drowning on the forenoon of the 4th and examined immediately after.

Liver and spleen of the usual colour and appearance. Gall bladder distended with dark bile. Injection of the capillaries of the omentum and mesentery, and of the external surface of the stomach and intestines. The latter firm and contracted. The internal surface of the stomach (which contained a little soup) longitudinally corrugated, and of a pale lilac colour assuming a pinkish hue on washing and exposure to the air. Duodenum containing an orange coloured slightly frothy gelatinous fluid, with a small piece of bone in its upper extremity. Its internal surface presented a uniform fleshy granular-like appearance, exactly resembling a raw excoriated surface. Over the lower two-thirds of the intestines were scattered six or eight circular patches, having at first sight the appearance of ulcers that had healed. They were all of precisely the same shape and extent being exactly circular, and nearly the size of a sixpence, with raised and well defined borders, giving them the appearance of rings. Their inner area, when minutely examined, was found to be on the same level with the surrounding membrane (the apparent depression arising from the elevation of their margin) and presented the same fleshy appearance which characterized the rest of the membrane, without any of the puckering which is usually observed in a cicatrized ulcer. In the jejunum and ileum there were irregular fleshy patches, the rest of the mucous surface being pale and smooth. Colon contained a little dark soft feculence. Its inner surface was irregularly and closely corrugated, and of a uniform bright red colour. Urinary bladder much distended, and the capillaries of its mucous membrane minutely injected.

Remarks. — We observe here, for the first time, capilliform injection of the omentum, mesentery, and external surface of stomach and intestines. 2d. A healthy appearance of the mucous lining of the stomach. 3d. The uniform fleshy granular, raw appearance of the inner surface of the duodenum chequered with circular patches, resembling rings. No sanguinolent exudation. Irregular fleshy patches in the jejunum and ileum. 3d. Colon of uniformly bright red colour. 4th. We observe, for the first time, the mucous membrane of the bladder minutely injected.

Altogether the appearances in this dog appear to be a less degree of the morbid appearances observed in those which had taken calomel, with the remarkable exemption of the inner surface of the stomach, and with the addition of increased vascularity of the omentum mesentery, external surface of the stomach and intestines, and mucous membrane of the bladder.

XI. — On the forenoon of the 1st February, 1839, gave a healthy dog (that had been confined during the preceding night without food) 3ss. of calomel in pill. Vomited about half an hour after, and rejected part, at least, of the calomel. In the evening gave him rice and soup. On the 2d and 3d the same dose was repeated, and followed each time by vomiting half an hour after swallowing it. On the 2d had several greenish dejections, and three or four black motions on the 3d. On the forenoon of the 4th was killed by drowning, and examined immediately after.

Liver and spleen of the usual appearance. Gall bladder distended with bile of more than usually dark colour. Considerable injection, particularly of the large vessels of the omentum and mesentery. Intestines contracted, and pale externally. Peritoneal coat of stomach very slightly injected. Stomach containing a couple of spoonfuls of a dark frothy fluid: its inner surface corrugated longitudinally, and of a deep red colour, particularly on the projecting border of the corrugations ,which appeared as if dipt in blood. Duodenum contained some orange coloured fluid. Its lining membrane presenting streaks and irregular patches of a deep-red colour, apparently caused, in part, by a sanguiform secretion, which could be scraped off readily with a sponge or the handle of the scalpel, leaving the intestinal tunics pale, and thin, but entire. Jejunum and ileum very much contracted, their inner surface pale coloured generally, but presenting several small patches smeared with a dark grumous effusion, with lividity of the corresponding portions of the peritoneal membrane. Inner surface of colon longitudinally and thinly corrugated, of deep-red colour, with a smearing of effused blood on the projecting borders of the corrugations.

Remarks. — We notice the large quantity of bile in the Gall bladder, and the presence of a bilious fluid in the stomach and upper part of duodenum, as in Experiments ii, iii, iv, vi, and ix. 2d. Ramiform injection of the omentum and mesentery. 3d. Deep-red co-

lour of the gastric mucous membrane, particularly on the projecting border of its longitudinal corrugations, which appeared as if dipt in blood as in Experiments ii, iv, v, vi, and ix. 4th. Streaks and irregular deep-red patches, with sanguiform exudation in duodenum, as in Experiments ii, and iv, and in a more marked degree in Experiment ix. 5th. Small patches of the mucous membrane of the jejunum and ileum, smeared with a dark grumous effusion, with lividity of the corresponding portions of the peritoneal membrane. 6th. Appearance of colic mucous membrane resembling that of the stomach.

XII. — On the 30th January, 1840, at 9 A. M. gave a healthy dog five grains of calomel in pill, which was repeated at 5 P. M. Vomited an hour after the first dose. On the 31st gave a third and fourth dose at the same hours as on the day before. Vomited an hour after the forenoon dose, and was purged during the day and night : evacuations dark coloured. On the forenoon of the 1st February, was shot through the head, and examined immediately after.

Liver of a deep mahogany colour, and not bleeding on incision. Gall bladder filled with very dark green liquid bile. Biliary ducts pervious. Spleen of the usual appearance. Stomach and bowels externally of a pale pinkish colour, the latter firm and contracted. Large veins of mesentery much injected. Stomach containing about half an ounce of orange coloured frothy fluid. Its inner surface longitudinally and densely corrugated : the capillaries of the projecting convex border of the corrugations minutely injected, the remaining portion of the mucous membrane being of a pale lilac colour. The pyloric extremity less corrugated, and of a pale whitish colour. The muscular coat of the stomach firmer and more contracted than in any of the former experiments (did this arise from the sudden mode of death ?) Duodenum containing a viscid dark orange coloured frothy fluid. Its mucous membrane presenting, here and there, dusky-red streaks of what appeared a sanguinolent extravasation, removable by the scalpel, leaving the subjacent membrane of a white colour. Jejunum empty, without a trace or tinge of bile : its mucous membrane of a pale greyish colour, with here and there small capilliform streaks. Upper part of ileum containing a small quantity of dark-greenish coloured frothy fluid : its surface of a pale greyish pink colour. Lower portion of ileum empty, of a greyish colour, with here and there small injected streaks, and in some parts of a slight sanguineous exudation. Cæcum containing a little dry feculence : its mucous membrane of a natural appearance. Colon containing a little dark feculent matter. Inner surface of colon and rectum longitudinally corrugated, and minutely injected. Bladder empty and contracted ; and its inner membrane of natural appearance.

Remarks. — We observe 1st Capillary injection of the projecting borders of the corrugations of the stomach, the remainder of the gastric mucous membrane healthy. 2d. Small portions of sanguinolent extravasation in duodenum and ileum, the intervening portions healthy. 3d. Capillary injection of the colic mucous membrane.

The appearances altogether in this experiment are more analogous

to those of Experiment x, (particularly in the stomach and large intestines) than of any other.

XIII — On the 30th January, 1840, at 9 A. M. gave a healthy looking dog a pill containing five grains of calomel, which was repeated at 5 P. M. Was purged two hours after the second dose — dejection dark coloured. On the 31st gave a third and fourth dose at the same hours as on the previous day. Vomited an hour after the last dose. On the forenoon of the 1st February the dog was shot through the head, and examined immediately after.

Liver of a lightish mahogany colour, giving out liquid blood when incised. Gall bladder filled with a liquid dark green bile : the three biliary ducts quite pervious. Spleen of the same appearance as in former experiment. Stomach and bowels externally greyish white, with a slight pinkish hue : the latter firm and contracted. Stomach containing a small quantity of a pale drab-coloured, viscid, muciform fluid. Corrugations longitudinal, but less numerous and prominent than in Experiment vii. Mucous membrane presenting a pale grey blanched appearance. Inner surface of duodenum of a pale grey colour : its upper portion containing a little of the same fluid as observed in the stomach, with a very slight admixture of bile ; the lower portion containing a small quantity of ash-coloured viscid fluid, like inspissated mucus. Jejunum containing a small quantity of a similar but more consistent fluid : its mucous membrane pale and uninjected. Inner surface of ileum generally pale, with numerous small detached patches of extravasated blood ; its lower portion of a palish white colour throughout. Cæcum, colon, and rectum containing a fluid similar in appearance to that observed in the duodenum. Mucous surface pale, and longitudinally corrugated. Bladder containing two ounces of urine : its mucous membrane of the usual appearance.

Remarks. — The appearances in this experiment are somewhat peculiar. 1st. The appearance of a pale-drab coloured, viscid muciform fluid in the stomach, and under a slightly modified form, in the upper portion of the small bowels, and in the large intestines. 2d. The gastric and intestinal mucous membrane of a pale grey colour throughout, with numerous, small detached patches of extravasated blood in the upper portion of the ileum.

XIV. — On the 21st February, 1840, a pill containing ten grains of calomel was given to a healthy dog at 10 A. M. and repeated at 5 P. M. The dog was purged in the night. On the 22d the above doses were repeated at the same hours, without any effect on the bowels. On the 23d at 10 A. M. the dog was shot through the head, and examined immediately after.

Liver of dark mahogany colour, and emitting a small quantity of blood on incision. Gall bladder containing dark liquid bile. Biliary ducts pervious. Spleen of natural appearance. Stomach and bowels externally of a greyish white colour, with here and there a faint red tinge. Large mesenteric trunks injected. Stomach containing some half digested rice. Its inner surface longitudinally and densely corrugated, and of a pale lilac colour. Duodenum containing a very little orange coloured frothy fluid : its mucous surface of a

greyish white colour. Jejunum presenting the same appearance, with here and there a little sanguineous extravasation on its inner surface. Ileum containing some thin half digested feculence: its mucous membrane of a faint rose tint. A little thin feculence in the cæcum: its mucous surface of a greyish white colour. Colon longitudinally corrugated: the upper portion of its mucous membrane presented a large patch of a dotted bright red appearance; the lower portion of a greyish white colour. Rectum containing thin grey feculence: its inner surface greyish white. Kidneys of natural appearance. Bladder contracted and empty: its mucous membrane of a faint rose tinge.

Remarks.— We observe the gastro-intestinal mucous membrane of a healthy appearance, with the exception of, 1st, A little sanguineous extravasation in a few places in the jejunum. 2d, A large dotted, bright red patch in the upper portion of the colon, and 3d, The mucous membrane of the bladder of a faint rose tinge.

XV. —On the 24th February 1840, at 5 P. M. a pill containing 3i. of calomel was given to a healthy dog. It vomited, and was several times purged during the night; the evacuations of a greyish colour. The same dose was repeated at 9 A. M. and again at 5 P. M. on the 25th. Vomited several times during the day and night, of the 25th but was not purged. On the morning of the 26th appeared very heavy, and refused food. At 1 P. M. on the 26th was shot through the head and examined immediately after.

Liver of a mahogany colour, of softer consistence than usual, and bleeding freely on incision. Gall bladder filled with dark liquid bile: biliary ducts pervious. Increased vascularity, both of the capillary and the large vessels of the omentum. Minute ramiform injection of the peritoneal coat of the stomach. Bowels externally of a reddish white colour, firm and contracted. Mesenteric trunks injected. Stomach containing about an ounce of an orange coloured frothy fluid: its internal surface longitudinally corrugated, and of a uniform bright red tint, with a few bleeding points on the projecting borders of the corrugations; its pyloric extremity smoother and less injected. A small quantity of orange coloured frothy fluid in the portion of duodenum between the pylorus and the opening of the ductus communis choledochus; and the mucous membrane of the above portion was injected in streaks, and presented several bleeding points. The remainder of the duodenum and the whole of the jejunum coated with a very viscid congee-like mucus (without any biliary tinge) beneath which the mucous membrane presented irregular, elevated, dusky red patches, with here and there small patches of extravasated florid blood. Ileum containing for about six inches of its length, a quantity of muco-sanguineous fluid, with capillary injection of a great portion of its mucous membrane. Cæcum containing a muco-serous fluid, and minutely and vividly injected. Colon densely corrugated, the corrugations being longitudinal in the upper portion, and transverse in the lower portion and rectum. The whole of its inner surface of a uniform and intensely red colour. A little muco-serous fluid in the rectum. Kidneys emitting an unusually large quantity of blood on incision.

but not diseased in structure. Bladder empty and contracted : uniform bright capillary injection of its mucous membrane.

Remarks. — 1st, In this experiment the capillary injection of the mucous surface of the colon was more intense than that of the stomach. 2d, There was no appearance of bile below the opening of the ductus communis choledochus. 3d, There was increased vascularity of the omentum, the peritoneal coat of the stomach, the substance of liver and of the kidney, and the mucous membrane of the bladder. 4th A muco-sanguineous fluid in the ileum, and a muco-serous fluid in the cæcum and rectum.

Article II.

Report on the Diseases which have occurred in the H. C.'s Steam Flotilla on the rivers of Mesopotamia, from the 1st January, to the 31st December, 1839, with a short sketch of the Climate and Topography. By John C. Floyd, Esq. Surgeon in charge.

Presented by the Medical Board, April, 1841.

Before entering on the above report, I have thought it right to preface it with a short sketch of the topography and climate of the country; for, the latter are so intimately connected with the production of disease, that without a knowledge of them, it would be as difficult to understand the various diseases, extending over such a tract of country, as it would be to localize any particular one.

The country, to which this report refers, extends from 30° to 34° North latitude, and from 40° to 45° East longitude. It includes all the country between the Persian Gulf and Bagdad on the north, the Lauristan hills on the east, and the desert to the west of the Euphrates; and it has borne successively the names of Shinar, Babylonia, Chaldæa, Mesopotamia, and Irak Arabi. It forms at present the southerly division of Turkish Arabia, and comprises the greater part of the Pachalic of Bagdad.

Its physical aspect is that of an immense plain, composed of a deep stratum of black alluvial soil, watered by the Euphrates and Tigris, and intersected with numerous canals. These two great rivers, rising in the mountains of Armenia, pursue a course of several hundred miles, and then emerge from their rocky channel, about one hundred miles above Bagdad on the Tigris, and fifty above Hilla on the Euphrates. From thence, after a serpentine course of four hundred and fifty miles, during which they often approach within thirty miles of each other, they unite at Korna (said to be one of the ancient "Apameæ" built by Seleucus Nicator, now an Arab village,) forty miles above Bussora forming one of the noblest rivers of the east, which under the name of the Shut-il-Arab, runs one hundred and thirty miles further, and disembogues itself into the Persian Gulf: the current averages two knots in the low and five in the high season.

These rivers in their extensive course through a flat country, are constantly changing their character, breaking down their banks and

forming islands, andt here sharing the same fate every succeeding year. The quantity of debris brought down every year, cannot be calculated with certainty, as it must vary with the rise and fall of the stream; but, that it is immensely great, there can be no doubt, from the rapid formation of islands and banks, and also from the immense alluvial banks, which are gradually extending themselves into the Persian Gulf.

Surrounding Country. — This is exceedingly bare, vegetation scanty, except on the banks of the rivers, where the pastoral Arabs feed their flocks, and in some places have settled down to cultivate the soil.

The soil from Bagdad to the Persian Gulf, is entirely alluvial, and of a depth varying from twenty to thirty feet, we then come to a blue and white clay of a very adhesive nature, which contains a quantity of silica and alumina. This is manufactured into vases and water vessels, and from its porosity, allowing of slight evaporation from the surface, the water contained in them is always deliciously cool.

No rocks any where show themselves, but from the character of the hills to the north of Bagdad and Hilla, their dip and strike into the Mesopotamia plain, I have reason to believe that they consist of a micaceous slate, gypsum, and calcareous sand-stone, the second of these abounding. Muriate of soda is an extensive product of this desert, and particularly near Bussora, where it is observed in the form of beautiful crystals, at the edge of every little pond, and it is exported in large quantities from the place. The immense ruins, composed of sun and kiln burnt bricks, which are scattered over this country, attest the greatness of its former population; the earth of these ruins, as that of Seleucia below Bagdad, when washed and evaporated, yields a considerable quantity of saltpetre.

Canals. — The number and extent of these extraordinary works, which once rendered this country so productive, we cannot do more than glance at. We are told that, "in consequence of the periodical rise of the Euphrates, artificial canals were dug by the ancient inhabitants, for the double purpose of protecting the contiguous plains from inundation, and at the same time of preserving the superfluous waters for the irrigation of the soil:"—that it had this effect, the present sterility of the upper portion of this country, and the inundation of the lower, fully demonstrate. Between Bagdad and Babylon, a distance of forty-five miles south, we meet with four very celebrated

canals, one of these, called the Nahar Malacha, or Royal canal, which Julian sailed his fleet through. The magnitude of this may be judged from the fact of the Hon'ble Company's Steamer Euphrates having sailed through one called the Succaloweia, which runs from river to river, but it is now shut up to prevent any further inundation. Another canal, called the Naharawan, runs on the east side of Bagdad, for a distance of three hundred miles; its bed is nearly dry. Midway between Bagdad and Bussora, at Kool-il-Amarah is a canal called the Hye, which runs to the Euphrates, for a distance of ninety miles; it is navigable. The only other canal which I shall mention is the famous Palla Copus, navigated by Alexander the Great, and supposed to be the ancient bed of the Euphrates. It commences below Hilla, and a branch of it was repaired for a short distance by the Nabob of Oudi as far as Mesid Ali, a place of pilgrimage. This canal being stopped up, the Euphrates has overflowed its banks, and formed an extensive, and deep lake, in the western desert

Vegetation. — As might be expected is abundant on the banks, particularly in the vicinity of Bussora, Korna, Bagdad, and Hilla, where forests of splendid date trees, confer on the inhabitants immense wealth; along with these the glycyrrhiza, the tamarisk, and the arunda abound, and in some places the two latter form immense jungles, in which the lion and the leopard are occasionally seen. The gardens at Bussora and Bagdad, produce almost all the varieties of fruit, peculiar to a temperate climate, and even some of the tropical plants flourish here, as the mango, the plantain, and henna: all the European culinary vegetables are likewise yielded in abundance. As rain does not fall in sufficient quantities for agricultural purposes, all irrigation is artificial, and carried on by means of water wheels, worked by bullocks. The different sorts of corn, sesamum orientale, (an oil plant) are cultivated in great abundance, also, cotton, opium, indigo, rice and tobacco.

The delta enclosed between the Euphrates and Tigris, has, not unaptly, been compared to that of Egypt; for in the time of Herodotus, the ground yielded three hundred and sixty times more than it received, and whatever may be the approach to truth, when oriental historians fix upon it as the site of the "Garden of Eden," certain it is, that its capabilities are as evident as ever, though the caperbush, the colocynth (of the Pharmacopeia) some species of mimosa, the camel-thorn, the salix Babylonica, and a few saliferous plants, are all that now relieve the eye, in a country which once yielded produce equal to a third part of Asia.

The Inundations. — The banks of these rivers are exceedingly low, and thereby easily overflowed, at the time of the annual rise, these take place in the spring and summer months, from the melting of the snow in the mountains of Armenia, they form an important feature in the medical topography of this country, as they completely change the nature of the climate where they prevail. The rivers often fall and rise during the winter months, but the grand rise takes place in the Tigris in April, and in the Euphrates in May, when the former rises about eighteen feet and the latter fourteen feet, and the current which before was only one and a half, is increased to five knots. Notwithstanding this the rivers keep their height, the banks then give way and a more or less extensive inundation covers the country, depopulating villages and laying waste the gardens and fields; such at least was the case at Bagdad in 1839, when from the above cause half the town was under water, but such are temporary and soon retire, as the rivers again descend in August and September.

From Bagdad and Hilla northwards the country is not so liable to these inundations as the banks are higher. About thirty miles above the junction of the rivers at Korna the desert is always one sheet of water. Carry a line from this point across the Euphrates, and from thence over the desert to Bussora and Tobier, it is one vast marsh for a distance of seventy miles. This inundation took place about eleven years ago, shortly before the last plague. A line of banks was formerly kept up along the Euphrates to keep the water out, but these have been completely swept away, and the Government of the country are neither able nor willing to repair them, which would recover a fine tract of country, secure Bussora from ruin and the inhabitants from disease. Indeed, it is not improbable that the Euphrates will find its way into its ancient channel, which emptied itself near the modern town of Grane in the Persian Gulf.

Climate. — The climate of this country must vary exceedingly, as we descend from the snow clad hills where the rivers have their source; but, of that portion, between the Persian Gulf and Bagdad, included in this report, there is little difference unless where local causes operate. The seasons may be divided into the spring, hot, and cold; the former commences about the end of January and continues until the end of April. The Thermometer ranges from 50° to 70° daily, though sometimes it rises much above this; north and south winds blow alternately for five or six days at a time, and at their change sometimes heavy showers of rain descend and

renew the verdure of the desert: all agricultural operations are now carried on. May is the first of the very hot months, in it the corn ripens and is gathered in, before the end of June, when the thermometer averages 105° daily, and every thing appears scorched from the sun. The heat of July and August is intolerable, the Arabs call it "saum" or the date harvest; the thermometer is 115° in the shade and the inhabitants take shelter in their surdaubs or cellars. Hot winds occasionally prevail; the nights however are cool; the atmosphere free from moisture, except near the marshes; and refreshing sleep in the open air compensates, in some degree, for the enervation produced by the heat of the day. In September the heat gradually declines. The cold weather commences in October when there is a variation of 20° to 25° daily, and from this to the end of January it is not unusual to see every thing frozen on the decks. The prevailing winds are the north-west and south-east, called by the natives the Shumaul and Shirgee, they blow chiefly in the winter and spring. Tornadoes or whirlwinds are not uncommon in the hot weather; they approach giving but little warning, and carrying an immense cloud of dust which involves every thing in obscurity. It was in such an one that His Majesty's Steamer "Tigris" was lost on the Euphrates in 1835.

The following table taken from the register of the thermometer kept in the cabin of the Euphrates, which is rendered very cool by wind sails will elucidate the above.

Table Showing the Maximum, Minimum, and Mean Temperature, as registered from the Thermometer at Bagdad for the year 1840.

	Maximum.	Minimum.	Mean.	Prevailing Winds.
January	64	25	50	N. W. and S. E. with rain.
February. . . .	68	36	57	N. W. and S. E. with little rain.
March	75	36	66	Strong N. W.
April.	83	48	74	Ditto.
May	95	65	77	Towards the end of the month hot winds.
June.	101	72	87	N. W. breezes.
July	105	78	98	Calm clear weather. Thermometer 105° underneath the awnings and 135° in the sun.
August.	108	79	97	Hot winds.
September . . .	100	65	85	N. W. Temperature of river 80°.
October	97	58	67	S. W. with squalls.
November . .	76	51	63	Rains with Squalls.
December . . .	65	33	45	In the four part of this month N. W. with rain, in the latter frosts.

Besides the general account of the climate and country it is necessary to particularize three principal stations of the steamers.

Bussora is situated upon the Shut-il-Arab, ninety miles from the sea, in Latitude 30° 27′ 30″ north, and Longitude 47° 40′ east. The town has been depopulated by the plague and scarcely numbers at present 15,000 souls : the houses are in ruins and every place exceedingly filthy. The canals which intersected it are never cleared out, and instead of proving beneficial to the town, are a never failing source of miasmatic fevers from the decomposed animal and vegetable matter which they contain. The banks of the river, above and below Bussora, are low and lined with lofty date trees, between which, a jungle of liquorice, rank grass and reeds, rise and contributes its share in the production of fever after the inundation of the rivers in June, extensive marshes also lie to the west and north of the town. The heat at Bussora, is not so great as at Bagdad ; but the atmosphere is always loaded with moisture which renders it dangerous to sleep in the open air. The inhabitants have a sickly appearance and such is the dread of Bussora, that it is not unusual for natives higher up the river, before going there to transact business, to make their wills lest they should never again return. Intermittent and bilious remittent fevers, prevail from May to October, and during that time the place is exceedingly unhealthy.

Marghill. — Four miles to the north of Bussora, is a village called Marghill, at this place there is a very large quadrangular building belonging to the Resident at Bagdad, which has hitherto been occupied as a depot, on account of its contiguity to the river, while the steamers were erecting, and furnishing stores for depots and any wards for an hospital in case of sickness. What has already been said of Bussora applies with equal force to this place, except that there is not the filth of the town.

The Hon'ble Company's Steamers and vessels ought not to lie here in the hot months longer than can be avoided. An Arab town called Mohumrah, situated at the mouth of the Kowran, thirty miles below Bussora, is a much healthier place, and from this to forty miles above Korna, either river, can be steamed in one day, by which the marshy country is passed and the upper parts of the rivers are then comparatively healthy. The distance from Bussora to Bagdad is two hundred and fifty miles by land, and and four hundred and fifty by water : the steamers take six days in going up (steaming only during the day) and three days returning

Hilla. — Adjoining the most remarkable scene of desolation which the eye can picture, in the extensive ruins of ancient Babylon, is the modern town of Hilla, built on both sides of the Euphrates. It contains 7,000 inhabitants, has good caravanseras, and carries on an extensive trade with Bussora and the districts higher up the river. The town is clean and is generally healthy; sometimes intermittent fevers prevail in spring and September owing to the great marsh to the south.

Bagdad — situated on the Tigris in Latitude 35° 15′ 40″ north, Longitude 44° 24′ 45″ east, though it retains little of its former splendour, it is still an immense place. The town is built upon the alluvial soil, and is somewhat lower than the river, which in summer percolates the ground and fills the surdaubs with water. The bazars are extensive and abound with most of the ordinary necessaries of Europeans. The inhabitants number 100,000, a fifth of whom are Jews and Christians. The town is generally free from disease, unless when visited by the plague, which they say happens every sixty years on a large scale, and a minor one every thirty. Though the extremes of heat and cold are felt here, the climate is perfectly healthy. To avoid the great heat the inhabitants live in surdaubs or cellars, where the thermometer stands as low as 78° while at the same time in the shade it will be 115°; and the nights are so dry and cool that they sleep on their terraces with perfect impunity.

Population. — The population consists of two classes, the Arabs of the desert, and the inhabitants of the towns. The desert Arabs in this part of Arabia, have given up in a great part their predatory occupation, for the more certain one of agriculture. One large tribe called the Montifidge is extensively engaged in the commerce of the rivers; their mode of life is excessively simple. They have not the vigor or stature of the Arabs to the north, and do not live to a good old age, owing I think to their living chiefly near the marshes and being worn out with fever; their clothing consists of a black or white camlet cloak; a long coarse shirt and a chaffen with a small turban for a head dress. They live in black tents made of horse hair or reed huts. Another class of Arabs are employed in tracking boats up the rivers, they are oftener in the water than out of it, and it is extraordinary how they bear the intense heat of the sun without any covering but a small cumberbund. To protect themselves from the swarms of musquittoes by night, they roll their bodies in the

mud and in the morning wash it off, they are not proof against the climate and they sink suddenly when attacked by fever.

The inhabitants of the towns, as I have already said, are composed of Arabs, Turks, Chaldeans, Armenian Christians, and Jews. The two latter are the same enterprizing and parsimonious people here as in all other parts of the east, and engross the chief part of the commerce. Large towns have been seldom found to be good nurseries for morals, and accordingly we find that the Turks, as well as Christians, have added the pleasure of the cup to the pipe, and the Government have sanctioned the establishment of drinking houses, where a deleterious drink, made from aniseed, dates, sugar, and hushash, ("*The Cannabis Sativa*") is sold; and it is not uncommon to see the Turkish Nizam rolling drunk in the streets.

It is well known that the Turks were formerly great opium eaters, it is now rare to find one in Bagdad, but it is worthy of statistical record, that the use of this pernicious drug has been merely laid aside for that of intoxicating liquors, which have increased so much of late, that the Koran has become a dead letter in the land of the Prophet. Pork is sold openly in the bazars, and debaucheries, heretofore unheard of, are publicly permitted.

Chaldean Christians. — These people merit a distinct notice. They are called Chaldeans, Mestorians, and Mooslies, because they come from the hills in the neighbourhood of Mosul on the Tigris; they are of middle stature, athletic, and not wanting in courage They are honest, and hard workers, and are chiefly employed in Bagdad and Mosul as domestics.

They have been, not unaptly, compared to the Irish peasant, as they resemble him in dress and are exceedingly pugnacious. It is from these people that the native portion of our crews is taken; being Christians they agree very well with the Europeans, they work willingly and are capable of enduring great fatigue.

Prevailing Diseases. — The diseases which prevail in this country, and from which the natives without any distinction suffer, are intermittent and remittent fevers, dysentery, scrophula, ophthalmia, and rheumatism. The natives have the fever in its intermittent form: they are easily cured by bark or quinine, but as neither advice nor medicine are procurable in this country, they often drag out a miserable existence and death ensues in consequence of some visceral disease

There are few of the natives but suffer from gastric and intestinal irritation which shows itself in the spring and October, in the form of mild dysentery. A variety of causes combine to produce this effect on the system of natives, among these may be noticed the frequent great diurnal range of temperature, their long religious fasts, and their excessive use of melons, cucumbers, and the like; to which, I think, may be added the continual sipping of hot coffee.

Scrofula is met with under the form of diseased joints and phthisis.

Diseases of the eye are so common, both in the towns and desert, that it is rare to meet a person without some abnormal affection of those organs: cateract is very prevalent in those men who have passed their climacteric.

Diseases of the skin are not of frequent occurrence, if we except the date boil. This I attribute to the natives in the town frequenting the humaums; and the Arabs often laving themselves in the river.

The epidemic diseases which prevail here, are, variola, rubeola, and influenza; the former is not very fatal owing to vaccination being universally practised. It is, I believe, to Mrs. Rich, the lady of the late Bagdad Resident, that this great blessing is due.

A case of idiopathic tetanus from cold occurred to one of our post men; with the true Mussulman resignation, he refused to try any remedies and submitted to his fate.

There is only one species of venomous serpent known here, and fortunately it is very rare. On the contrary, large black scorpions swarm here in summer, and their sting is said to prove fatal to young people, for this the bezoar stone is in great repute with the natives. The greatest nuisance in the town and villages of Mesopotamia is the great number of filthy and diseased dogs, without masters, but suffered to exist for the purpose of consuming the refuse in the streets; strange to say, that amongst them hydrophobia, not only never occurs, but is not even known by the inhabitants.

The natives invariably have themselves bled once a month, when a small tea-cupful is generally taken away, and in the absence of aperient medicines, it may be serviceable in lessening the disposition to inflammatory disease, and perhaps affording one reason why they seldom have fever in its remittent form.

A few ignorant French medical adventurers in the service of the Pacha, with the native practitioners, represent medical science in this country. The latter class I am told are much the same here as all other oriental Hakeems, and have little discrimination in applying their remedies. A great number of oriental drugs are found in the Bagdad bazars, many of which are indigenous to this place.

Health of the Europeans. — From what has already been stated respecting this climate, where the extremes of heat and cold are apparent and the heat exceeding that of India, it may be thought any thing but salutary for Europeans. The annexed register of the diseases which have occurred for the year ending 30th December, 1840, certainly shows a fearful amount of disease among such a small body of men; but it is to be remembered that almost all the diseases included in the returns, have had their origin in Bussora or its locality, from causes which I shall presently mention, and that above this place, the climate, though hot, is perfectly healthy as is proved by the crew of the Euphrates having been for the last three years employed in the upper part of the rivers, and during that time enjoying better health than in the most favoured European climate.

We cannot exactly tell the effect of Bussora climate upon sound constitutions; for the seamen and artillery men who compose our crews, were either notorious drunkards or else worn out by a long residence in a tropical climate; and then again, the difficulty of treating men in a small vessel, where the radiated heat is great, the washing of decks, the excessive noise, and the impossibility of regulating their diet, all tend to disturb the patient and render a satisfactory termination less probable.

From January, 1840, until the end of March, the native and European crews of the Euphrates, were employed at Marghill in assisting at the building of three other iron steamers. The sick admissions amounted, to fifty-seven, of these six were cases of diarrhœa, one hepatitis from drinking, and the rest chiefly relapses from intermittent fever, which they had caught here, in the November previous, while digging docks for the steamers.

In April I went up to Bagdad in the Nimrod on duty, and leaving the three other steamers to wait for the crews which were expected soon to arrive from Bombay. The Euphrates arrived at Bagdad on the 2d of June with two men ill from remittent fever, who died two days afterwards. The crews in the mean time arrived from Bombay but not sufficiently strong to work the vessels; towards the end of June every man was laid up with fever, and before we could arrive at Bussora to render assistance, two Engineers had died, and many of the others were in a precarious state. It was however imperative to bring the vessels up the rivers for a change of air; the convalescents, as well as the strong, were obliged to work during the greater part of the day, the thermometer standing at 112° under the awnings, and after eight days the vessels arrived at Bagdad. Officers as well as men, being much exhausted, and the sick getting worse, a large well

ventilated house on the river, was immediately procured and converted into a temporary hospital, to which the sick were removed. towards the end of August, the sick began to be convalescent, and it was deemed advisable to remove the steamers to Gararah, four miles south of Bagdad, where they might exercise themselves in the shade of the date gardens.

During the time the men were in hospital, the thermometer averaged 105° in the shade. Four deaths occurred from remittent fever, which with the four mentioned above, make eight from fever, besides one death from hepatic abscess, one from dysentery, one from phthisis pulmonalis, and one from disease of the heart. Eight have been sent to the Presidency for a change of air, and four others must be sent this month for the same purpose.

The foregoing is a brief account of the causes which have led to such fatal results and crippled this Flotilla for the rest of the year, all of which might in a great measure have been obviated had the crews been stronger and more equal to the vessels; and we cannot but sympathise with the European soldiers and seamen, who have to suffer under such circumstances.

We shall now make a few remarks on the above diseases as they occurred.

Remittent Fevers. — This fever prevails at Bussora from June until September, when it changes its character and becomes intermittent. It is chiefly of a bilious nature and is always complicated with affection of the brain and abdominal viscera; and continues from one to three weeks if not arrested by medical treatment. The patient usually complains of a dull pain in the head and a sense of lassitude for some days previous to the fever, which is afterwards ushered in with chills, and the patient though really hot, complains of cold. This however is of short duration; the headache increases, the pain being chiefly referred to the temples and eye brows; the eyes suffused; the skin becomes burning hot; epigastrium painful; stomach irritable with vomiting of bilious matter; tongue loaded, dry, and coated with brown at its back part; bowels usually costive, sometimes slight purging; urine scanty and scalding; thirst urgent; pulse varies from 105° to 120° full and strong. If the disease be not subdued in time by medicine, this state of things continues for six or seven days, then there is great anxiety, the countenance has a vacant appearance; the motions become black, fœtid and frequent; the patient lies chiefly on his back; there is considerable nervous agitation, dark brown

tongue, the stools are passed involuntarily, and the patient dies in a fit of delirium or comatose.

Sometimes however the Bussora fever occurring in weakly constitutions is protracted for weeks, petechiæ occur and sordes covers the teeth, and then death takes place from exhaustion and inanition, as in some cases of typhus. Seventy-four cases of the above fever are included in the return, but if we make allowance for the re-admissions, fifty will be a nearer approximation to the truth.

The treatment adopted consisted of bleeding freely from the arm in the commencement of the disease. This was always followed by instantaneous relief to the head and epigastrium, while at the same time it prepared the way for the introduction of mercury; and an emetic cathartic mixture was then exhibited, unless whenever the irritability of the stomach forbad it. The rest of the treatment consisted in relieving local pain by means of cupping and leeches, and the introduction of mercury combined with antimony, saline draughts, &c. enemata were of great use in relieving the tension of the abdomen, and the motions changing their dark colour for a more natural one, is the first favourable symptom.

It is very difficult to affect the system with mercury in this disease; some patients took one hundred and sixty grains without being affected by it, and in all those where it succeeded, a rapid recovery soon took place. The reason of this difficulty is, that the fever is a highly inflammatory one; the remissions are very indistinct, unless in debilitated constitutions, and in these we gave quinine.

The recoveries from the fever are often tedious and it has an evident tendency to disorganize the mucous membrane of the bowels. The pathology of the above fever we think will bear out the treatment which was adopted. Cerebral congestion and patches of inflammation in the chylopoietic viscera were always present, with softening of the liver and mucous membrane of the bowels: the casualty cases of Houston Bynam, and Gunner William Brown, furnished to the Medical Board, will illustrate the above. My observations led me to conclude that as miasmatic fevers proceed from the same source, the poisonous miasm may lie dormant in the system for some weeks before giving rise to fever, and that then it is produced in its remittent form through exposure to atmospherical heat or some debauch.

I shall now mention two or three cases to illustrate the above. Andrew Moir, engineer of the "Nimrod" left Bussora on the 25th of March, he performed his duty up to Bagdad where he arrived on the 2d April, he enjoyed very good health until the 21st, when having got

intoxicated and exposed himself to the sun, which was now very hot, he was seized with rigors followed with high fever, and complicated with inflammation of the liver ; he was bled with relief to his side ; Mercury was freely given. The fever however continued with slight remissions ; delirium, involuntary motions, and petechiæ, supervened ; yet, notwithstanding he recovered after being seventeen days ill.

The next case is that of Engineer Hamilton. He had slight ague at Bussora in June, and left that place on the 2d July, apparently well, he was much worked coming up the river, being exposed to a temperature of 140° in the engine room, and 115° on the deck. On the 11th he arrived at Bagdad, only a little fatigued, as he said, after his nine days work ; on the 14th, he was seized with severe fever and died on the 24th. His case has already been furnished to the Medical Board, so that it is not necessary to make any further remarks here, than, that ptyalism could not be produced.

Acting Master Holland, had remittent fever at Bussora in July, and was brought up in the Steamer Nimrod, in August, for a change of air ; he continued in good health for fourteen days after his arrival at Bagdad, when by some indiscretion in cooling himself when the body was over heated, he was seized with fever complicated with pleuro-pneumonia, the latter was subdued by bleeding and tartrate of antimony ; but the headache, epigastric tenderness, and dark fetid motions continued until the gums became sore, when he rapidly recovered again.

Acting Master P. one Gunner and Corporal Maltman, left Bussora in the cold weather, all well. Seventeen days after their arrival at Bagdad the Corporal had fever in its intermittent form, while the two others from indulging in some excess, got fever in its remittent form. They were bled, purgatives and diaphoretics administered, and at the end of six days they resumed their duty. Had these latter occurred in the hot weather, the termination might have been different.

Intermittent Fever. — The crews of all the steamers, save the Nimrod, suffered from this fever, having caught it at Bussora in June and October.

I shall not dwell upon the symptoms of a fever which has been so often described and must be so well known in India. It prevailed chiefly in its tertian form, the cold stage is of long duration and the entire paroxysm continues from three to five hours. The debility in consequence of this fever, is very great, and the most athletic person is soon reduced in strength.

Though malaria, the exciting cause of this fever, never ceases to exist here, yet, I am of opinion, that the predisposing causes, such as sleeping on the decks in the humid state of the atmosphere, depressed spirits and intoxication, had more share in bringing on the attack: for, nine cases out of ten, were preceded by some abnormal state of the stomach and bowels.

The treatment consisted in the first place in restoring the secretions by mercurial purgatives; emetics and diaphoretics were exhibited during the hot stage; and afterwards quinine was liberally given as an anti-periodic. Venesection was tried in several cases, but with no apparent benefit; however indispensable it is in the bilious remittent, it would be too expensive a remedy for the constitution to undergo, on every attack of this fever. Quinine, arsenic, and nitrate of silver, have all had their trial; quinine, though a valuable remedy for intermittent fever has signally failed here, though administered in very large doses. This we attribute to Lunar influence and the southerly winds which generally attend the change of the former. The fever from this cause is so regular an occurrence, that it is not uncommon for the men to come for their quinine a day or two before the expected attack. A change of climate by sea has proved itself to be the only effectual remedy for Bussora fever. The sequelæ of these frequent attacks of intermittent fever, are more to be dreaded than the disease itself. Of these in the returns, there is one case of enlarged spleen; this yielded to a course of alteratives and quinine. Two cases of abdominal dropsy; one of them an artillery man had disease of the heart and the swelling always returned: he was sent to the Presidency. The other was owing to enlarged spleen and general debility; it yielded to blue pill, squills and digitalis, followed by tonic: it is now ten months since and the patient continues in good health.

Hepatic Affections. — Of these, fourteen are included in the returns: three however, are re-admissions; of the remainder, six were chronic, and five acute. There was nothing peculiar in any of these cases, they all occurred in men who had served in India and seemed to be owing partly to intemperance and partly to the sudden vicissitudes of the climate which are not favourable for such a class. One casualty occurred from hepatic abscess in Gunner James Ward, he had been ill with the disease in Bombay, five months previous to coming up here, and afterwards suffered from intermittent fever at Bussora: the only thing worthy of remark was the small slow pulse sel-

dom exceeding 58 and the entire absence of constitutional irritation. This case was furnished to the Medical Board.

Dysentery. — Of this disease seven cases are returned and one death. This casualty, though under this head, I am inclined to regard as a case of gastro-enteritic fever after ptyalism was produced, the patient seemed to do well for eleven days, he then relapsed and died six weeks after his coming into hospital. This case, was also furnished to the Medical Board. Of the six other cases one was colonitis which occured to acting Conductor Grady. Venesection, small doses of calomel, and opium, and anodyne enemata, was the successful treatment.

Diarrhœa. — Twenty cases of diarrhœa are returned, the most of these were simple cases of increased intestinal secretion, owing to some error in diet or the water in the neighbourhood of the marshes which is brackish, and full of vegetable matter.

One however was the sequela of remittent fever, continued three months, and was finally cured by sulphate of copper in half grain doses, thrice a day, after all other remedies had failed, two others cases of chronic diarrhœa occurred in two officers, brothers, Lieutenant ———, and Captain ———, of the ——. They had both suffered from disease of the bowels in India, and there is no doubt but that it was connected with tubercular disease of the intestines in both. They were both sent to Europe for a change of climate, and we regret to add that Lieutenant ———, has since died on his way home.

Dracunculus. — One case occurred to an Indian servant, but it is not indigenous to this country.

Thoracic Affections.—Under this head are included nine cases, of which four were bronchitis, two pneumonia; and three cardiac diseases. Of the latter, one has proved fatal, and another has since died at Karrack, both the patients were artillery men, and had suffered from fever at Bussora; one of them recovered and soon after got an attack of bronchitis upon which supervened enlargement of the heart, palpitation, dyspnœa, and œdema of the legs. The pulse at first 115 after using digitalis some time it came down to 65. The patient after being ill two months was sent to the Presidency and died on his way down. The third case is enclosed with this report as a casualty.

While on this head we think it right to notice, that numerous cases, of affection of the heart have occurred amongst our Europeans, while

under treatment for intermittent fever, it does not in the first instance amount actually to disease, but if not attended to, it may prove itself the precursor of further mischief. They usually complain between the periods of the attack of fever, of a soreness in the left side, sometimes amounting to pain and extending into the shoulder and arm of the same side. Pain increased on taking a deep inspiration, decubitus on the affected side, and sometimes in a semi-erect position. The pulse is little altered at the first, there is no fever, and the bowels are generally costive. The patient seldom complains unless he gets worse or unless questioned by the medical attendant The stethoscope does not indicate any change in the organ itself save the strong systolic sound of the ventricles. The whole seems to depend upon an excessive irritability of the muscular parietes produced by the slow circulation of the venous blood, during the frequent cold stages of fever. It generally yields to local bleeding, digitalis and morphia with an occasional laxative.

Phthisis Pulmonalis. — Of this disease two cases occured, one died here, and the other was sent down. Both lungs were found to be a mass of tubercles in different stages of suppuration.

Rheumatism. — Ten cases are returned, but four of them are readmissions and one continues on the list. This disease next to fever is the most difficult to treat owing to the atmospheric changes and southerly winds. The remaining case has resisted every known remedy; sarsaparilla and hydriodat. potassæ given, as anti-mercurial, which appears to have done some good.

Surgical Cases. — It might be expected that the working of such weighty machinery as the engines and boilers of four steamers would have been attended with serious accidents, such however, was not the case, two fractured fingers which were amputated, and a few contusions were all.

Ophthalmia. — One case of iritis and one of conjunctivitis. Six cases of purulent ophthalmia occurred in the families of the artillery and are not included in the report. This disease is endemic in the month of July and August: it is as severe as the Egyptian variety, and requires the most active antiphlogistic treatment with the application of nitras argenti (in its chronic stage.)

Ulcers. — Of these eight cases, one is an old syphilitic sore. The rest are date marks. This curious ulcer which prevails upon these rivers from Aleppo to Bussora, attacks all classes indiscri-

minately, young old, rich, and poor, all suffer alike. The native children generally have it upon their cheeks where it leaves an ugly cicatrix. while the Europeans have it mostly on their hands fore-arms and legs, and generally, within six months after their arrival. Few in the flotilla have escaped it, though it is seldom so bad as to put them on the sick list. This ulcer has been well described by Dr. Russel in his history of Aleppo and is well known in the East as the "*Antash pharse*," *Bouton d'Alepp*, *Timurmal Bagdad* (or date mark) it is of purely local origin being more virulent at Aleppo less so at Bagdad, and least of all at Bussora. The Arabs on the rivers never get it unless when they reside in the towns; it seldom attacks the same individual the second time but still there are examples.

Of the causes said to produce, it we shall not here add to the numerous hypotheses respecting it. The water has been blamed for it, but it exists in an equal degree where that essential is good or bad. It is unattended with constitutional symptoms and the treatment therefore is perfectly local. It is at first an indolent ulcer somewhat larger than a rupee with pale granulations, it then becomes exceedingly irritable eating into the sub-cutaneous cellular membrane, bleeding granulations then sprout up to the surface, then it becomes covered with a thick scale, which soon falls off and it again goes through the same process without any attempt to cicatrization, this continues for eight or nine months. In some cases it has all the appearance of a syphilitic ulcer. The treatment which we have found most serviceable, consists in poulticing in the first instance with bread or yeast, if it can be had, and afterwards applying the lotion of chloride of soda twice a day, and weak acetate of lead ointment with opium during the interval: the limb at the same time is benefited by the application of a moderately tight bandage; under the above treatment the ulcer will heal in four or six weeks. Water dressing, when it can be applied, as on the arm or hand, with oiled silk is attended with like success. Iodine has been tried without benefit.

Concluding Remarks. — The foregoing remarks have been necessarily curtailed on account of the limits generally assigned to a report, but I believe that the diseases already mentioned may be considered, to prevail always more or less amongst Europeans serving in this country.

From what has already been said respecting Bussora, I have only to repeat that the sea and the river steamers ought not to remain at Bussora during the months of June, and July, August, and Septem-

ber, but that another depot should be established for that purpose nearer the sea. Secondly that in case of sickness occurring higher up the rivers two houses should be kept in readiness at Bussora and Hilla, to which they might be removed to be under the superintendence of a medical officer; and thirdly, as the hospital in Karrack has been made available for the sick of this flotilla, invalids will henceforward be sent there for a change of air, if necessary.

No. I.

Return of the Sick belonging to the Hon'ble Company's Steam Flotilla at Bagdad, from the half year commencing 1st *July, and ending the* 31st *December*, 1840, *Together with Grand Total of Sick for the year ending* 31st *December*, 1840.

Strength Europeans . . . . 96 } 172 Total.
Natives . . . . . 76 }

Disease.	Apoplexy	Asthma.	Cholera Bilious.	" Spasmodic.	Cutaneous diseases.	Cachexia.	Diarrhœa.	Dropsical Affection	Dysentery.	Dislocations and Sprains	Delirium Tremens.	Dracunculus	Fractures.	Fever Remittent.	Fever Intermittent.	Gonorrhœa.	Hepatic Affect. Acute	" " Chronic.	Inflammation. External.
Remaining 1st July, 1840.	..	..	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..
July	..	..	..	..	..	..	4	..	..	..	..	1	..	29	25	..	..	3	..
August	..	..	..	..	..	..	1	..	3	..	..	..	..	4	12	1	..	1	..
September	..	..	..	..	..	..	1	..	..	..	..	..	..	2	7	..	..	2	..
October	..	..	..	..	..	..	1	1	1	..	..	..	..	1	10	..	..	1	..
November	..	..	..	..	..	..	1	..	..	1	..	..	..	4	7	..	2	..	..
December	..	..	..	..	..	..	1	..	1	..	..	..	1	..	6	..	..	..	..
Total. .	..	..	..	..	..	..	10	1	5	1	..	1	1	42	67	1	2	7	..
Total included in the half year by Return ending the 30th June, 1840	..	..	..	..	1	..	10	1	2	1	..	..	1	33	39	1	5	..	7
Grand total for the year 1840	..	..	..	1	..	20	2	7	2	..	1	2	75	106	2	7	7	7
Discharged	..	..	..	1	..	19	2	6	2	..	1	1	67	106	2	5	7	7
Died	..	..	..	..	..	..	..	..	1	..	..	..	8	..	..	1	..	..
Remaining 1st January, 1841	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	1	..	..

No. II.

Return of the Sick belonging to the Hon'ble Company's Steam Flotilla at Bagdad. Continued

Disease.	Cephalic.	" Thoracic.	" Abdominal.	Affection of the Urinary Organs.	Mania.	Opthalmic Affections, Acute.	" " Chronic.	Phthisis Pulmonalis.	Rheumatism.	Spleen Disease.	Syphilitic Affection Primary.	" " Secondary.	Small Pox.	Scurvy.	Ulcers	Wounds.	Other diseases.	Total.
Remaining 1st July, 1840 . .	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	4
July.	3	..	1	..	..	1	..	1	..	..	..	..	..	..	1	1	1	71
August	..	..	..	1	..	..	..	1	..	..	..	1	..	..	1	..	1	29
September	1	1	..	..	..	..	..	..	3/2	..	..	..	..	..	..	..	..	18
October	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	16
November	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	1	..	19
December	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	11
Total.	4	1	1	3	1	2	..	2	6	..	..	1	..	..	4	2	3	168
Total included in the half yearly Return ending the 30th June, 1840.	2	8	..	..	1	..	..	..	4	1	..	..	..	..	4	2	10	133
Grand total for the year 1840.	6	9	1	3	2	2	..	2	10	1	..	1	..	..	8	4	13	301
Discharged	6	8	1	2	2	2	..	1	9	1	..	1	..	..	8	4	13	279
Died	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	12
Remaining 1st January 1841.	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	5

Article III.

Reports of the 1st Troop Horse Brigade, stationed at Sholapoor, Poona and on Field Service in Scinde for the years 1838, 1839 *and* 1840. By A. H. Leith Esq.

Presented by the Medical Board, April, 1841.

Report for 1838.*

General Observations. — During the first nine and half months of the past year, the troop was stationed at Sholapoor; it left that cantonment in the middle of October, and marched to Poona where it has been only for two months.

In a review of the practice among Europeans during the year, dysentery is the disease, which combining severity with frequency of occurrence, is most prominent on the list. In February it bore somewhat of an epidemic character, and its prevalence at that time may have been connected, in some measure, with the cause of cholera which then continued to rage in the surrounding country, and again made its appearance among the Europeans of the troop.

Small Pox, was another disease of severity, that also in February visited us, but was confined to two cases. The fever cases I have found to be generally of a tractable nature. Cases of syphilis, which occurred but seldom in the first half of the year, have latterly been very numerous and the cause of a heavy sick list; all available measures have been taken to check the disease without avail.

Drunkenness, which is the cause so prolific of disease among Eu-

* *Stationed at Poona.*

	Strength.
Included in the returns.	106
Absent on command beyond the division or on leave.	3
Total.	109
Number of Sick.	
Remained 31st December 1837	8
Admitted in 1838	335
Discharged	321
Died in hospital.	3
Remaining 31st December 1838	19
Average daily number of sick for the year.	14
Average number of convalescents	0
Died without receiving medical treatment.	1
Changes since 31st December 1837.	
Recruits joined	
Discharged from the service on account of disease	
Discharged from the service on account of other caues	
Invalided.	
Pensioned	2

ropean troops in India, must be particularly referred to here as the cause of a large portion of the cases admitted, not merely indirectly, by giving a proclivity to the ordinary diseases of the country but directly, for most of the wounds, contusions and cases of dyspepsia, and cephalalgia are the immediate results of it. The soldier, both at Sholapoor and here, has great facility in getting ardent spirits in quantities limited only by his means of paying for it.

The following is a Tabular view of the diseases among Europeans treated in the Hospital of the Troop during the last year. It shows both diseases, when a patient was treated for more than one.

Diseases	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total treated.	Cured.	Died	Sent for change of Climate.	remaining under treatment.
Mean Temperature	73	75	78	85	87	88	82	80	82	78	75	73					
Mean Range of Thermometer	25.36	21.37	16.39	19.79	20.93	18.42	10.42	14.28	20.17	21.95							
Asthma	..	..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..
Burn	2	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..
Cardiac Affection	..	..	..	1	..	..	..	..	..	..	..	..	1	1	..	..	..
Cephalalgia	..	..	3	2	1	1	2	1	..	..	2	..	12	12	..	..	..
—— " ——Intermittent	1	..	1	..	1	..	..	..	..	..	..	..	3	3	..	..	..
Cholera	..	3	..	..	..	..	..	..	1	..	..	..	4	3	1	..	..
Constipation	..	..	..	..	1	..	..	..	1	..	..	..	2	2	..	..	..
Contusion	3	1	..	3	2	2	..	1	..	2	..	1	15	15	..	..	..
Cutaneous diseases	..	..	..	..	..	..	..	..	..	..	..	2	2	1	..	..	1
Cynanche Tonsillares	..	..	..	2	..	..	..	..	..	..	..	..	2	2	..	..	..
Delirium Tremens	..	..	..	1	1	..	..	..	..	..	..	..	2	2	..	..	..
Diarrhœa	..	..	..	..	2	..	2	..	1	..	..	1	6	5	..	..	1
Dysentery	2	6	..	2	..	2	2	3	..	2	1	1	21	20	..	1	..
Dyspepsia	1	3	..	..	..	2	1	1	1	1	..	..	10	10	..	..	..
Epistaxis	1	..	..	..	..	..	..	..	1	..	..	..	2	2	..	..	..
Fevers	6	3	4	1	5	4	2	6	3	12	10	9	66	63	..	1	2
Fractures	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	1
Gonorrhœa	1	2	2	..	2	1	1	2	1	..	1	4	20	17	..	..	3
Hepatic Affections	..	..	2	2	1	1	..	1	2	..	..	4	13	12	1	..	..
Inflammation External	3	3	2	2	6	1	2	1	1	1	..	3	25	23	..	..	2
—— " ——Cephalic	..	..	1	2	..	..	..	..	..	..	1	..	1	1	..	..	..
—— " ——Thoracic	..	..	1	2	..	..	..	..	1	..	1	1	9	7	..	1	1
—— " ——Abdominal	..	..	..	..	1	..	..	1	..	..	..	..	2	2	..	..	..
Odontalgia	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..
Ophthalmia	..	..	..	..	1	..	..	1	..	..	..	..	2	2	..	..	..
Rheumatism	..	..	1	..	..	..	1	1	..	2	..	..	5	5	..	..	..
Small Pox	..	..	2	..	..	..	..	..	..	..	..	..	2	1	1	..	..
Spasms of Stomach	..	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..
Splenic Affections	3	1	2	1	..	1	..	..	2	..	..	..	10	10	..	..	..
Sprains	1	1	1	2	1	2	..	3	1	1	..	..	12	12	..	..	..
Syphilis	1	1	1	1	2	3	1	3	6	2	1	9	30	33	..	..	6
Urinary Affections	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	..
Ulcers	..	2	2	3	..	2	..	1	2	..	..	1	14	13	..	..	1
Wounds	2	1	2	3	3	6	..	..	1	4	3	..	24	23	..	..	1
Total of each Month	29	30	24	29	31	28	8	36	23	30	36	39					
Total Cases treated during the year													353	328	3	3	19

Average daily number of Sick 14.65
Do. Do. Strength of Troop 103.28
Do. Do. percentage of Sick 14.18

Medical Diseases.

Cephalalgia. — Of the cases under this head, three were of a neuralgic nature; the rest were the consequences of drunkenness.

Intermittent Cephalalgia. — In this disease quinæ disulphas or cinchona was given in exactly the same way as in intermittent fever, and with equal success.

Cholera. — In the instances in which it occurred was attended with severe spasms chiefly affecting the lower extremities. All the patients were of intemperate habits and in each case the attack followed a debauch; one case proved fatal. The treatment in this disease was directed to excite the heart and arteries to the due performance of their functions, so that arterial blood might be prepared and carried through the body. To attain this, powerful stimulants were employed to act on the depressed nervous system, but as preliminary measures, the irritability of the stomach had to be allayed to enable it to retain the medicines, the heart had to be relieved from the oppressed and gorged state which would prevent its contracting on its contents with sufficient vigor, even if brought under the influence of stimulants, and the congestion of the pulmonary circulation had also to be relieved. To accomplish the first of these objects a pill of about two grains of opium was given and with a view to the second and third, blood was taken by venesection to the extent of a pound and a half or two pounds, stimulants were then administered, and ammonia was the one chiefly used on account of depressing effects not following its exhibition even when given in large quantities. It was given in the form of its aromatic spirit or of liquor ammoniæ the first, in doses of ʒiss. to ʒii. and the latter in equivalent quantities and made into a draught with camphor mixture, the dose was repeated half hourly, or hourly and on the mitigation of the disease was diminished in strength and in frequency of repetition. As external adjuvants, sinapisms were applied to the epigastrium, the insides of thighs and the calves of the legs; hot bottles, and dry frictions were also employed.

Delirium Tremens.— Neither of the cases of this disease was severe. The treatment was antiphlogistic with the frequent affusion of cold water in a small stream from a height on the head.

Diarrhœa. — Some of the cases were nearly allied to dysentery.

Dysentery. — One of the men admitted in January had suffered long from this complaint and it was on a chronic state of the disease that the acute attack for which he was now treated supervened; on its again subsiding into a chronic state he was sent for change of air to Poona. The dysentery which prevailed in February and again after the commencement of the rains, was characterized by frequent scanty stools with much tenesmus and tormina. The dejections were slimy or gelatinous and more or less bloody; there was considerable tenderness of abdomen, generally in the iliac regions. The circulation was seldom accelerated, but the pulse was quick in the beat and not readily compressed; thirst was urgent. In treating these cases the chief reliance was on the use of the lancet at the commencement; bleeding from the arm was practised until the pulse became soft and all appearance of blood was gone from the dejections. Each bleeding was performed with the patient sitting, or in the semi-recumbent posture, and the blood was allowed to flow until slight faintness was induced; thus from two to three or even four pounds (and in one instance as much as five pounds) were taken at first and the bleeding was repeated once or oftener if necessary. Then leeches were applied to the abdomen until all pain and tenderness from pressure were removed, and hot fomentations were used frequently in the course of each day; from these the patient experienced great relief from tormina, and they aided materially in the removal of the disease. Purgatives were given daily in these cases, and ipecacuanha in small doses, every two hours, uncombined. This last medicine had not a very marked effect, but did appear to render the motions more feculent; opiate enemata were sometimes used. The cases which were admitted during the hottest weather, differed in character from the above mentioned, the motions were more liquid and copious, and an equally free use of purgatives did harm; bleeding, leeching and fomentations, were employed, and the continued use of the infusions of rhubarb, gentian and ipecacuan, was beneficial. In such cases and in the chronic form of the disease, I have seen ipecacuan in doses of twelve or fifteen grains, combined with three or four grains of opium, given once or twice a day, do much good. These cases were more tedious than those which occurred in the cold weather.

Fevers. — Have been chiefly intermittents of the tertian type; there have been however some remittents of considerable severity. An emetic was administered and was followed by a purgative, and during the presence of pyrexial symptoms, the patient took saline diaphoretics. In some cases the lancet or leeches were required from the

severity of the fever or the appearance of local symptoms; on future fever days, quinine or cinchona was given, the former in doses of four or five grains, the latter of 3ii, about four hours before the time of the expected paroxysm and repeated hourly until the usual time of accession of fever had gone by. If the fever was tertian, no medicine with the exception perhaps of a purgative, was given on the intervening days. This treatment almost always at once cut short the fever and when two successive accessions were prevented, the cure was usually considered completed. In two cases venesection in the cold fit was tried, but unsuccessfully; such has been the treatment of intermittent fever.

Hepatitis. — In this disease the treatment consisted in subduing the inflammatory action in the liver and in removing its consequences. Depletion by means of the lancet, leeches, and mercurial purgatives, was employed. In venesection, the object was to lessen the momentum of the blood not to induce syncope; in combining mercury with the purgatives, the intentions were to aid in the removal of congestion in the liver by exciting increased secretion, and by bringing the system slightly under its influence, to promote the action of the absorbents that they might remove interstitial deposits resulting from the inflammation. After depletion had been carried as far as seemed to be beneficial, counter irritation by blisters was had recourse to. A case of abscess of the liver, terminated fatally; one of the two cases which accompany this report is of hepatitis.

In my cases it may be observed that the quantity of blood abstracted by leeches is noted, this I ascertained by having them weighed before their application; and after they had fallen off. As the capacities of leeches vary much I found it useful to note this, for it enabled me to determine with greater accuracy the number of those then in use which ought in any case to be applied, and although the effect produced on the disease is for the most part the best criterion of the propriety of their repetition, it was satisfactory and not altogether useless, to know how much blood a patient had already lost during the treatment.

Having for many months kept notes of the weight of the leeches applied in Hospital and the blood which they took, I find that the latter is always nearly in proportion to the former, whereas the proportion which the blood taken bears to the numbers applied, varies according to the numbers of times the leeches have before been used. I now therefore generally prescribe them by weight instead of by numbers, as from my observations I find it a much more accurate way of

performing depletion by them. According to the memoranda kept, they take four or four and half times their own weight of blood, so that if ℥iv. be ordered to be supplied, I expect from ℥xvi. to ℥xvii. to be taken by them. The leeches which have chiefly been the subject of my observations are obtained by the leechman from Ahmednuggur, but are I believe originally brought from Burhampoor.

Thoracic Inflammation — These were all cases of catarrh excepting one in which there existed disease of the lungs of long standing. The patient was sent to the sea coast and a statement of the case was then furnished.

Small Pox. — This disease was very prevalent during the last cold season in the town of Sholapoor and among the natives in the cantonment. In one hundred and sixty-two cases among them, of which I had intelligence, but which did not come under medical treatment, twenty-five proved fatal; the deaths thus being 15.43 per cent. Of the two cases which occurred among the Europeans of the troop one was modified by previous vaccination. The other patient had not been vaccinated and in him it was confluent and ended fatally on the twelfth day.

Spleen Disease. — The means used to remove this disease were chiefly purgatives and leeches, and vegetable bitters with chalybeates. In one of the cases treated, there was severe inflammatory disease of the viscus which required repeated venesection and the very free use of leeches; the recovery was slow, but perfect. In course of the disease the liver became affected. In treating the hepatic disease, five grains of calomel had been twice given combined with purgatives, when the mouth became sore. I had before seen inflammation of the liver supervene on that of the spleen. In most other cases, the affection of the spleen was combined with some other complaint. In some the spleen was in a chronic state of enlargement which resisted all attempts to reduce it, many of the men of this troop have enlarged spleens which give them little or no uneasiness until they have a fresh attack of fever. Of the remaining medical cases in the table, there are either so few under each head or they are so trivial as not to furnish sufficient grounds for remarks.

Surgical Cases

The External Inflammations where chiefly boils and buboes

Epistaxis. — In these cases the bleeding was checked by cold applications, in both cases it was combined with, and probably, depended on enlarged spleen.

Fracture. — The only case which happened, is a compound fracture of the humerus from the bite of a horse, the muscles are injured and it is yet doubtful if the man will recover the perfect use of the arm.

Gonorrhœa. — The cure in the disease was affected by cubebs in doses of ʒii. thrice a day or balsam of copaiba. If the running continued long, bougies were passed and astringent injections used.

Syphilis. — There were only two cases of secondary disease among these. The treatment in the primary cases has been to give blue pill so as slightly to affect the mouth, the patient being kept on low diet.

Contusions, Sprains and Wounds — were for the most part unimportant injuries which were received in drunkenness. One case of wound was of a serious nature, the patient losing an arm and the sight of an eye besides being burnt and wounded in the face. The accident occurred at the annual review at Sholapoor when the man was ramming a gun. Amputation above the elbow was performed by the double flap operation as soon as possible after the injury. The man has been sent before the invaliding committee.

In practice among the natives connected with the troop but few medical cases of importance occurred. There were two cases of intermittent cephalalgia which readily yielded to cinchona, and a case of paralysis which recovered. Among the surgical cases, there was one of fracture of the patella and three of fracture of the radius which were treated by position only, and it answered well at least as long as the cases were under observation, two however went away before the cure was completed. I may mention also two cases of amputation of a finger and a case of necrosis of one side of the inferior maxilla in a child eight or nine years old. It was consequent on small pox, on the dead bone separating which it did in two and half months from the commencement of the disease, the new arch of the jaw was tolerably firm.

In obstetric practice, I removed from the uterus of the wife of a gun lascar, a firm fibrous tumour weighing two pounds ten ounces.

There was a case of puerperal convulsions and one of arm presentation in which turning was performed.

Report for 1839.

In the subjoined* statement of the strength and number of sick I have included only those actually belonging to the first troop that it may strictly be a record of the troop.

In the following table I have, however included all who have been attached belonging to the other troops, viz. recruits for the 2d at Deesa, and sickly men belonging to the 3d and 4th troops who were either left behind or sent from the field. The proportion of sick is in consequence larger,

* *Stationed at Poona.*

Strength 110.

Included in the returns	103
Absent beyond the Division	7
Total	110

Number of Sick.

Remained on 31st December, 1838	19
Admitted in 1839	301
Discharged	308
Died in Hospital	3
Remaining on 31st December, 1839	9
Average daily number of sick for the year 14.99 per cent.	
" " " of convalescents "	
Died without receiving medical treatment	1

Changes since 31st December, 1838.

Recruits joined	10
Discharged from the service on account of disease	0
Discharged from the service for other causes	0
Invalided	1
Pensioned	3

The following Table shows all the diseases which were treated. Of these more than one sometimes occurred in the same patient.

Diseases.	January.	February.	March	April	May.	June.	July.	August	September.	October.	November.	December	Total treated.	Cured	Died	Sent for change of air or invalided.	Remaining under treatment
Cardiac disease	..	..	1	..	..	..	..	4	..	2	..	1	8	7	..	..	1
Catarrh and cynanche	..	2	..	..	1	1	1	1	1	1	1	..	9	8	..	..	1
Cephalalgia	1	2	4	..	1	..	..	4	2	..	1	..	16	16	..	..	..
Cholera spasmodica	..	..	..	..	1	..	..	..	..	1	..	..	2	2	..	..	..
Colic	..	1	1	..	..	..	..	..	..	..	1	..	3	3	..	..	..
Cutaneous disease	..	..	1	..	..	..	..	..	..	1	..	..	2	2	..	..	..
Delirium Tremens	1	2	1	..	..	..	1	..	..	..	..	..	5	5	..	..	..
Diarrhœa	1	2	1	3	1	4	..	1	..	..	1	1	14	14	..	..	..
Dislocation	..	..	..	1	..	..	..	..	..	..	..	..	1	1	..	..	..
Dysentery	2	..	2	..	2	4	..	8	2	..	..	..	20	19	..	1	..
Dyspepsia and Gastro-enteritis	..	..	..	1	2	1	..	11	..	2	3	1	11	10	..	..	1
Erysipelas	..	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..
Fevers	8	7	4	4	5	8	10	11	6	6	2	1	72	71	1	..	..
Fractures	..	..	1	..	..	1	..	2	..	1	..	..	5	4	..	1	..
Gonorrhœa	2	2	5	4	3	2	..	3	1	2	2	2	28	27	..	..	1
Hepatitis	6	4	8	3	2	1	2	3	2	1	3	3	38	36	1	..	1
Hæmorrhoids	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..
Opthalmic diseases	..	..	1	..	..	..	..	1	..	1	..	..	3	3	..	..	..
Odontalgia	..	..	..	..	..	1	..	..	..	..	..	..	1	1	..	..	..
Paralysis	..	..	1	..	1	..	..	..	..	..	..	..	2	1	1	..	..
Phlegmon Paronychia and Bubo	..	..	..	2	..	..	..	2	..	1	2	2	9	8	..	..	1
Poisoning	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..
Pulmonic diseases	1	..	..	..	..	..	..	..	..	..	1	1	3	2	1	..	..
Rheumatism	..	..	1	1	..	1	3	1	1	..	..	1	9	9	..	..	..
Spleen	3	..	1	..	..	1	2	..	..	..	1	1	9	9	..	..	..
Sprains	1	..	1	1	3	..	..	..	1	1	2	..	10	10	..	..	..
Syphilis	7	..	1	4	9	8	..	3	5	5	3	2	49	49	..	..	..
Tænia	..	..	..	..	1	1	..	..	..	..	..	..	2	2	..	..	..
Testis retroactus	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..
Ulcers	3	..	4	..	3	3	..	..	2	3	..	1	19	19	..	..	..
Urinary Affections	..	..	..	..	1	..	..	..	..	..	..	1	2	1	..	..	1
Wounds Contusions	1	1	1	2	..	3	..	1	2	3	1	4	19	17	..	..	2
Scorpion Sting																	
Total each month	37	25	49	25	35	40	20	47	25	31	25	22					
Total Cases treated during the year													375	330	4	2	9
Average daily Sick per-cent during the year 1·47																	

The sick list has been heavier during this year, than the last among the men of the first troop even without including the attached sickly men from other troops. The following are some of the causes viz. the heavier duty the men have had at Poona and the greater inducements to leave the barracks in the sun. It is difficult to say, whether their intemperance has been greater here or at Sholapoor; at neither station have any amusements been provided for them unconnected with the canteen.

There has been a larger proportion of visceral disease requiring active and longer treatment, and the hospital here is far inferior to that at Sholapoor. It has two wards with floors scarcely raised above

the level of the ground; they are both open to the east and the west leaving thus generally a high wind blowing through them; the windows are ill contrived for ventilation opening only perpendicularly. There was until lately no fence whatever round the hospital to prevent the patients obtaining improper food and drink, an additional sentry was obtained for a very short time, but the other duties of the troop being heavy he was soon removed. Lately I have got a prickly pear fence planted to protect the back of the hospital; but it will be a long time ere it proves a fully effectual barrier.

Prevailing Diseases.

Hepatitis. — Has been the most prominent disease. The number of cases is nearly thrice as great as during the preceding year, and about six times greater than is recorded any previous year that the troop was stationed at Sholapoor. The exciting cause of this disease has often, though not always, been intemperate drinking; I am unable to state any other particular exciting cause. Bowel complaints bear nearly the same proportion to the general sickness that they did last year. Affections of the heart have increased from one to eight; with the exception of two cases they all followed hard drinking.

In noticing the various diseases that have occurred there is but little regarding their treatment that I have to add to what I stated in my last annual report.

Medical Practice.

Cardiac Disease. — In all the cases there was pain more or less severe in the left side of the chest; tightness across the upper part of the chest; palpitation, oppression of breathing and cough, and sometimes sputa tinged with blood. Six of the cases evidently were caused by hard drinking; in one this cause was doubtful, and in one the disease arose from cold caught while in hospital. The treatment followed was depletion by venesection or leeches, and purgatives; the use of sedatives chiefly tartar emetic and digitalis, and counter irritation. In one of the patients, an old worn-out soldier depletion was inadmissible.

Cephalalgia. — Three cases were neuralgic and remittent, and were treated with quinine. With the exception of two, the rest were the consequence of intemperance. In these, depletion and cold local applications were used.

Cholera Spasmodica. — Both cases were treated with stimulants internal and external without venesection. They were both rather weakly men.

Delirium Tremens. — In all, the chief remedy was frequent and long continued affusion of cold water on the head.

Dysentery and Diarrhœa. — The character of the former disease as it occurred in the hospital are the same as it presented at Sholapoor. The same treatment has been followed in nearly all the cases, in a few I tried the effect of large doses of ipecacuan combined with opium with partial success. One patient in whom chronic dysentery supervened on hepatitis, has been sent to Bombay for change of air. The greater number of bowel complaints occurred during the rainy season which commenced early.

Dyspepsia and Gastro-enteritis. — Except one case of dyspepsia all admitted under these heads, brought on their sickness by drunkenness; alkaline combined with sedative medicines were given at first, and afterwards vegetable bitters were sometimes given conjoined with neutral salts or alkali.

Fevers. — Of the seventy-two cases recorded twenty-nine were *quotidian*, twenty-six were *tertian*, six *remittent*, five *ephemeral*, three *continued* one *quartan* and two *eruptive* of an anomalous kind. There have been very few fever cases since October. Towards the end of the rains the fevers were chiefly tertian whereas previous to that time quotidians were most common. Among those of the continued and remittent types, were some of great severity and one proved fatal in March: death was preceded by passive hemorrhage.

The *eruptive* fever of which two cases occurred, is remarkable for the presence of numerous small dull red spots, hard and slightly elevated appearing on the trunk, face and extremities, either at the very commencement of the fever or after one or two days. The eruption is unattended with any heat, itching or other uneasiness, it gradually fades away without desquamation disappearing last from the extremities, about a fortnight or three weeks after its first appearance.

The fever is in general severe, either continued or remittent; with pains in the limbs, chiefly in the legs and feet, accompanied with some loss of power in them. When the pain is referred to a joint, no swelling or disproportionate heat is perceived in it. The con-

tinuance of the fever varies from a few days to about two weeks. I have in two years met with six cases of this disease, of which two were at Sholapoor and four at this station. Of the six, two occurred in the cold season, two in the hot and two in the rains. One patient was an officer, another a lady, and four were soldiers, treated in hospital. A case illustrative of this fever accompanies this report.

Hepatitis. — The cold weather has been most productive of this disease. In the many cases which have come under treatment during the year, I have steadily followed the plan recorded in my last annual report. In one case which afterwards ended fatally, I opened an abscess in the left lobe with the lancet. The patient had long been subject to attacks of hepatitis and on this account was left behind when his troop went on service. The substance of the liver in the neighbourhood of the abscess bore marks of long continued disease. The case of a foot artillery-man sent from Bombay with abscess of the liver, who died in the hospital is worthy of notice, although he does not properly come within the subject of this report. The tumefaction in the side gradually disappeared and after his death the abscess was found nearly empty and two hepatic ducts communicating with it were found carrying pus to the duodenum.

Paralysis. — One patient lost the power of his arm for a short time after hard drinking. The paralysis of the other was caused by disease of the brain and ended fatally.

Poisoning. — The patient had taken by mistake in the barracks some saltpetre instead of salts, an emetic was all that it was found necessary to give.

Pulmonary Disease. — The only case it is necessary to particularize, is the fatal one of Phthisis Pulmonalis. The patient had been unwell for several years and is mentioned in last report as having been sent to the seacoast, he was unable to do any duty on returning.

Rheumatism — It only occurred in a chronic form.

Spleen. — Several of these cases were of an acute nature and not preceded by fever. In these depletion by leeches and purgatives was the remedy used. In the chronic cases the treatment stated last year was followed.

Tænia. — The treatment in this disease which I follow and find quite effectual is the exhibition of a strong decoction of the bark of

the root of pomegranate in divided doses on an empty stomach in the morning, having the night before given a full dose of ol: ricini. The worm is expelled dead. In one of these cases a tænia lata and tænia solium were discharged from the bowels together.

In my last annual report, I stated that in employing leeches, I prescribed them by weight instead of by number, having found that the blood they took bore a steady proportion to their weight. This mode of prescribing them I continue invariably to follow, and I find it most valuable as I can regulate the quantity to be abstracted in topical bleeding with nearly the same precision as if the lancet were used.

Surgical Practice.

Fractures.—One of the five was an old fracture of the leg in a man belonging to the 4th Troop. Of the other four one was a compound fracture of the pelvis from the kick of a horse: active treatment was required to subdue the abdominal inflammation that followed, owing to displacement of the fractured portion of the ilium the power of motion of the thigh was impaired; he has in consequence been sent before the invaliding committee. Another fracture was of the patella also from the kick of a horse, it was comminuted, but happily with very little displacement of the fragments. It was treated by position. The patient recovered the perfect use of the limb. A third was fracture of a rib received in falling against the corner of a cot. The treatment consisted in preventing the motion of the ribs by means of a broad bandage round the chest. General and topical bleeding were required. The fourth was fracture of the ossa nasi.

Dislocation.— It was dislocation of the scapular end of the clavicle and was received in wrestling. The man was thrown over the head of his antagonist and in falling headlong his shoulder struck against the edge of a cot. A bandage on the plan of Brasdor was applied but with the addition of sleeves fitting closely to the arms and extending from the shoulder straps to below the bent elbows, thus keeping the straps in the proper position. The patient was able to return to his duty between six and seven weeks after the receipt of the injury.

Syphilis and Gonorrhœa. — The aggregate of these cases has been nearly the same as during the former year. The only alteration in my treatment is, that I now rub the veneral ulcers freely with nitrate of silver, thinking that they afterwards heal more quickly.

Testis Retroactus. — The case which I have thus named is the only one remaining that requires to be noticed. When the patient

was at sword exercise, his right testicle was forced upwards into the inguinal canal and afterwards during severe straining, it passed into the abdominal cavity, where it remains. The man denies ever having had hernia, and a short time before the accident, I had strictly examined him previous to his being admitted to the Horse artillery.

Among the children connected with my charge, catarrhal ophthalmia and measles were for some time epidemic, both diseases I found of a tractable nature.

In practice among natives there have been very few cases of an interesting kind. Along with this report, I send the diary of a case of tetanus, treated with cannabis indica and tabacco enemata, it terminated successfully.

Report for 1840.

The Troop* was stationed during the greater part of the year at Poona, and while there, a very marked improvement in the health of the men was observable, the daily average of sick in hospital having fallen far below what it had been for many years.

* *Stationed at Poona nine months.*
In the Field three months.

Strength.	
Included in the returns.	120
Absent on Command, beyond the division or on leave.	0
	Total 120
Number of Sick.	
Remained 31st December, 1839.	9
Admitted in 1840.	295
Discharged.	292
Died in Hospital.	6
Remaining 31st December, 1840.	6
Average daily number of sick for the year.	9.23 per cent.
Average number of convalescents.	0
Died without receiving medical treatment	1
Changes since 31st December, 1839.	
Recruits.	0
Discharged from the service on account of disease.	0
Discharged from the service on account of other diseases.	0
Invalided.	0
Pensioned.	0

N. B. — These numbers include men of the 1st Troop, only, the attached of other Troops are not included.

The number of cases of disease treated has been about the same as during 1839, but among them there were fewer requiring prolonged treatment, and a greater proportion of slight cases, such as hurts from petty accidents, &c. among the more severe diseases hepatitis and fever held the most prominent place during the preceding year, whereas during last year, from causes to be mentioned below, gastric and bowel complaints, have taken that place.

During the year 1839, of the total treated, the percentage of hepatitis was 10.13, of fever 19.20, and of gastric and bowel complaints 14.13; and during 1840, the percentage was of hepatitis only 4.04 and of fever 11.86, but of gastric and bowel complaints 24.26. Thus the proclivity to hepatitis and fever which had been contracted at Sholapoor, and of which I had occasion to make mention in my last annual report, had worn out and the men appeared to have become acclimatised in their new station.

Towards the end of the monsoon the Troop received orders to proceed to Sind on Field service, and in consequence had a draft of men from the 2d Troop to complete it to 120, and replace some sickly men who were not then in a state for active service, and some whom it was thought necessary to bring before the annual invaliding committee.

On the 2d October, we marched from Poona towards Bombay, taking with us a draft 33 men for the 4th Troop, which we were to meet in Sinde, our march as far as Kandala was not attended with any circumstance worthy of remark, hitherto we had fair weather with a temperature about equal to that of Poona, and only a little increase of humidity in the air.

On descending the Ghat, the temperature as indicated by the thermometer increased a good deal and to the feelings it was oppressive owing to the atmosphere containing much more moisture as was ascertained by the hygrometer. Many of the men were now affected with diarrhœa and applied for medicine, three of those who did not apply at first for medicine were afterwards admitted for dysentery in which the diarrhœa had terminated.

On the 9th October, we arrived at Panwell where we were to embark the guns and heavy baggage for Bombay, and then we were to march thither by Tannah, but it was found that the route was impracticable at that season as there was no road through the flooded rice fields. Ere this was ascertained, however, the men's beds had been sent off, and only a carpet to lie on and his cloak to cover him had been kept for each, and no boats were ready for the transport of the men and horses to Bombay.

The weather which had been fair with only an occasional light shower, now changed, and for three successive nights we had thunder storms with very heavy rain. The tents continued wet and the clothes of the men were either wet or damp, the soft ground on which we were encamped, had become muddy and no straw was procurable to lay on the floors of the tents. From exposure to the inclemency of the weather during the night between 11th and 12th October, six men were admitted with symptoms of disease simulating cholera, and one with pericarditis. On the 12th October, the Troop with the exception of the sick, crossed the harbour and I removed the hospital to a shed on the bunder to wait for the boats which took us to Bombay on the 13th.

From what I saw at this time at Panwell, and during a march in the middle of the monsoon with recruits between Kandala and Poona, and also what I have seen at Poona of the consequences of marches from Panwell, to that station during the monsoon, I am convinced that a great saving of life would be effected by the erection of pendals at each halting place for the accommodation of troops. That this would not ultimately be an additional expense to Government, but the contrary from the saving in the wear and tear and the carriage of tents, has I believe been shown by Captain Sinclair, Commissary of Ordnance Stores at Poona.

It ought to be insisted on that the tarpaulings which are allowed should be taken to protect the bedding from rain on the march; the mat coverings of the carts of the country being insufficient during the heavy rain that falls in the monsoon; the roofs of the dhoolies also require to be better painted than they usually are, to render them water tight.

In Bombay the Troop was quartered in Fort George barracks and as is usual among soldiers, the meeting of old comrades was made the occasion of drunkenness, and from this followed eventually grievous consequences.

It is thought necessary to send two or three European soldiers in each native boat in charge of the troop horses put on board it, thus a large portion of the corps is removed from all medical aid for a period of two or three weeks, and for this the debaucheries of the short time spent in Bombay render the men ill prepared. Of those sent on this duty on the present occasion, one died of delirium tremens, two or three days after leaving Bombay, and some of the severest of the cases which filled the hospital at Kurrachee had their beginning at sea. After the horse boats were de-

spatched the remainder of the Troop embarked on board a Steamer with the families of the sepoys of a native regiment, in all there were about 300 persons for whom there was no other accommodation than a crowded and wet upper deck, and even for the sick there was at night but the scanty shelter of a boat's awning to protect them from the spray and dew, the danger of fire rendering it necessary that the larger awnings should be furled. Although we had favourable winds we were five days in reaching Kurrachee, owing to the Steamer having in tow two large native boats with the battery, camp equipage and stores. During this voyage one man had a severe attack of pneumonia and another who was convalescent from fever, had a relapse which proved fatal after our arrival at Kurrachee.

We were a month at Kurrachee, during which time the men lived in the slight temporary barracks, and the severe cases among the sick were received into the ill constructed foot artillery hospital, the less severe cases remained in the tent. The mean of the daily minima by thermometer was 59° and of the daily maxima 89° Fahrenheit, after 12 or 1 o'clock a south-westerly breeze began to blow, it gradually veered to north-west and about 9 or 10 o'clock at night, after a short lull the land wind set in gently from the north-eastward and continued until about 11 A. M. or noon, gradually increasing in strength. The atmosphere during the north-easterly wind was very dry.

After our arrival the number of sick gradually increased and dysentery was the most formidable disease, it proved fatal in two cases just before the Troop marched, and two others were left in the depot hospital of H. M. 40th Regiment, in a nearly hopeless state, and I have since heard of their deaths. The two who died in the Troop hospital, had each several small abscesses in the liver, both the patients were hard drinkers, and one had come up in a horse boat where the disease commenced insidiously. In one of the two cases that were transferred to the hospital of the depot of H. M. 40th Regiment, acute symptoms of hepatitis came on, when dysentery of a sthenic character had been subdued; in the other, symptoms of invagination of the intestine in the neighbourhood of the cœcum existed. A few cases of acute disease of the lungs also occurred during our stay.

At the end of November, we marched from Kurrachee for Upper Sinde, and as we had to pass through a country almost uninhabited and devoid of supplies, a large commissariat accompanied us for which camels were the only carriage, six of these animals were given to the hospital with kudjavas for the sick.

Our road at the commencement lay to the north-eastward over

an uncultivated level plain rather thickly covered for the first ten miles with large euphorbia bushes, capparis and zizyphus and some galega; on our left were some low hills, which on examination, are found to be curiously disposed in five somewhat concentric ridges with abrupt inward faces, while outwardly the strata are inclined at angles varying from 25° to about 80°.

In a central basin are the Thermal springs. On my visit to them while the troop was at Kurrachee, I found the heat of one spring, that which flowed into thes wamp famous for the hundred of alligators that inhabit it, to be 98° Fahrenheit, another at some distance, which followed into a reservoir was 119° and near it, issuing from a coral rock, was a small stream at 129°. I took away with me some of the water for analysis and found it contained nothing but a minute quantity of saline matter, chiefly chloride of sodium — it differed from the well water at Kurrachee only in temperature.

The plain over which our road lay ended at a low range of hill called Hola about four hundred feet high. The euphorbia nearly disappeared except at places where the soil was poor, it was replaced principally by mimosas. The surface of the plain was in many places incrusted with salt, and the water was often so brackish as to be unfit to drink. On crossing the low range we entered the Jubbul Moolk or Hilly country. Our fourth encampment was in a confined spot on the Kudajee river, where it passes through a narrow ravine between the Hala and another low range which approaches it forming an angle; here we halted a day.

The weather on the plain had been similar to what we had experienced at Kurrachee, but here in the morning we were enveloped in fog and had heavy dew, and during the day the air was close and moist. A general tendency to diarrhœa showed itself, and there were several applicants for medicine: one man was admitted with dysentery.

At this encampment many of the camels became sick and died, the same had occurred here to the camels of the troops who had marched before us, and it had been noted in the route furnished to us that they had died from eating some poisonous plant. Among others a fine camel of my own was taken ill and in the undigested food he vomited, I found the leaves of the nerium odor which satisfied me as to the cause of the mortality. The oleander grows very abundantly on the bank of the Peeperee and Kudajee rivers along with the tamarisk on which the camels feed. The sickness generally showed itself first in the animal refusing its grain and water, vomiting then came on and usually continued until death; there was hanging of the lower lip and heaviness and vacancy of the eye;

the abdomen became distended; the breathing was interrupted as if by gulping or gasping; the excretions were not suppressed, sometimes there was purging; the animal had disinclination to move and on being made to rise there appeared to be vertigo, it staggered and sometimes fell; at last it died in convulsions, after a period varying from a few hours to a day or two. I examined three of the poisoned camels, and found in two, the mucous membrane of the omasum inflamed, and in the third the inflammation had affected the reticulum, the omasum and the abomasum. In each of the three camels I found the lungs to contain hydatids; in two they were numerous and as large as limes: in the other there was but one large one — these I considered unconnected with the cause of death.

Some horses also had been poisoned here, although all of ours escaped, perhaps through the care that was taken to pick out the dry oleander leaves, which were brought in with the grass. In places where the oleander grows so abundantly, the forage for the camels ought to be cut and brought in to them.

After leaving the Kudajee river, the asclepias gigantea takes the place of the nerium on the banks of the streams, and the general appearance of the vegetation changes. — A different species of mimosa appears, and we now meet with the light green drooping piloo of which the camels are so fond; the water has less saline matter; the hills become more lofty; they are of varied outline, some are tabular, others gently rounded or crenated, serrated or peaked; they are much intersected with chasms and frequently have precipitous sides which sometimes disclose the strata to be arched.

These hills are of limestone and contain myriads of testaceous cephalopodous mollusca chiefly polythalamous, and indeed fossil remains of these animals form a great proportion of the mass of the hills among which we passed, some of which, such as Kambhoo and Keerutter are three or four thousand feet high. The most common genera of these cephalopoda are the nummulite, siderolite and the scaphite, the remains of echinodermata, also and a few testaceous gasteropoda are found in the rock, and at some places as at Pakuw and Mulleeree, gasteropodous and conchiferous mollusca abound in lower hills overlying the bases of the mountains, and in these the limestone is argillaceous, but here again there are strata almost entirely composed of cephalopoda, and these strata alternate with a soft calcareous sandstone devoid of organic remains.

After crossing the dry bed of the Muraee river close under Kambhoo, we entered the narrower valley of the Baroon river, where the Brahoo country commences, having on our right the extensive jut-

ting range which forms the western boundary of the lower plain of the Indus.

The bottom of the valley now contained much shingle similar to the neighbouring rock and but little rounded, mixed with alluvium, and in it were seen partly exposed large petrified trunks of dicotyledonous trees of different genera, and fragments of these were plentifully scattered on the surface of the ground for several miles. It appeared as if the trees growing in the valley (and it may yet be found the animals inhabiting it also) had been overwhelmed with the detritus swept from the surface of the neighbouring mountains, probably by the waters of the deluge. The trees thus buried had become petrified by the long continued percolation of water saturated with carbonate of lime and the superincumbent alluvium having been gradually washed away, they have become exposed, the mountains are again covered to their summits with similar detritus.

At Mulleeree the waters begin to run to the northward. The second march from thence we emerged on the upper plain of the Indus, the hills gradually diverging. On the right the Dharun range (called "Lukkee" in the maps) in which the jutting range terminates runing towards the river at Sehwan, and the comparatively low Budrow overtopped by the loftier Keerutter range continuing its northerly direction.

During the twelve days that were spent in marching among these mountains from Kudajee to Roree on the plain of the Indus, there were but two admitted into hospital, one for a kick from a horse, the other for gastrodynia caused by cold. On coming to the plain we found the daily range of the thermometer much greater than it had been in the mountainous country, and the cold during the march in the morning (sometimes near the freezing point) was much felt and several had attacks of gastrodynia.

We marched on the right side of the Arul river over part of the dry bed of the Munchur lake, and parallel with the Nara rivers over a fine alluvial plain, intersected by former water courses and at present mostly overgrown with jungle of tamarisk or sounder. In many places traces of former embanked fields are visible, where the tamarisk now abounds the surface of the ground is in some places thickly encrusted with salt.

We passed through Larkana to Shikarpoor, where we arrived at the close of the year, having accomplished our march of about three hundred miles from Kurrachee in a month. Very few admissions into hospital took place during the march, this is apparently at-

tributable to the excitement of the change and the absence of the means of drunkenness.

In the following table I have as usual entered separately each case of disease that occured in hospital, even if two were present in the same individual, and in it are included the diseases of the attached of other Troops

Table of Diseases treated in Hospital of 1st *Troop H. B. during* 1840.

Mean Temperature	67.3	70.5	76.0	85.0	83.7	79.9	76.1	75.1	75.5	[illegible]	73.9	65.2				
Mean Range of Termometer.	22.1	19.3	17.9	21.3	19.7	10.7	7.0	9.7	20.0	[illegible]	30.0	34.4				
Diseases.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Cases treated.	Discharged to duty.	Died.	Transfered.	Remaining under treatment.
Cardiac Diseases	1	2	2	1	..	4	1	1	1	1	1	..	15	15	..	..	..
Cattarrh and Cynanche tonsil	1	..	..	2	1	..	..	..	..	1	2	..	7	7	..	..	..
Cephalalgia	4	2	1	2	1	3	2	2	..	1	3	..	21	20	..	1	..
Cholera	..	..	..	..	..	..	..	..	..	7	..	..	7	7	..	..	..
Colica	..	..	..	..	..	1	1	1	..	..	1	..	4	4	..	..	..
Cutaneous Disease	1	1	..	..	..	..	..	..	..	..	1	..	3	3	..	..	..
Cynanche parotidæa	1	1	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..
Delirium Tremens	..	..	..	2	1	..	1	1	..	..	1	..	6	6	..	..	..
Diarrhœa	1	1	..	..	1	1	1	..	1	1	1	..	8	7	..	1	..
Dislocations and Sprains	3	1	1	3	3	..	2	2	2	..	1	..	18	18	..	..	..
Dysentery	..	1	3	2	3	1	5	1	2	5	10	1	34	28	2	3	1
Enteritis	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	..
Epilepsy	..	..	..	..	1	..	..	..	..	..	..	1	3	3	..	..	..
Febris	4	3	4	..	2	4	5	6	1	7	3	5	44	42	1	..	1
Fractures	..	1	1	..	1	..	..	..	1	..	..	..	4	4	..	..	..
Gastro-enteritis Gastrodynia and Dyspepsia	1	1	2	3	2	4	4	1	3	6	2	4	33	32	..	..	1
Gonorrhœa	1	1	..	2	..	..	..	1	..	2	4	..	11	11	..	..	..
Hæmatemesis	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..
Hemorrhois	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..
Hepatitis	..	3	2	1	3	1	..	..	2	1	2	..	15	13	1	1	..
Odontalgia and Otitis	1	..	1	..	..	..	..	..	..	..	..	..	2	2	..	..	..
Ophthalmic Disease	..	1	..	..	..	..	..	..	1	1	..	..	3	3	..	..	..
Peritonitis	..	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..
Phlebitis	..	..	1	..	..	..	..	..	..	1	..	..	2	1	1	..	..
Phlegmon, Bubo, Paronychia, &c.	6	2	1	2	3	..	2	..	..	1	1	3	21	19	..	..	2
Pulmonic disease	..	..	..	..	..	..	1	..	..	2	2	..	5	5	..	..	..
Rheumatism	2	2	1	1	2	..	1	1	2	1	5	1	19	18	..	..	1
Rupture of Muscle	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	..	..
Spleen	..	3	3	..	..	1	2	..	1	..	..	..	10	9	..	1	..
Syphilis	2	..	3	4	5	..	4	..	2	3	1	..	24	24	..	..	..
Ulcers. Dracun.: Contu	3	4	5	4	7	3	2	3	5	5	2	2	45	45	..	..	..
Total	32	31	31	29	36	23	34	22	24	48	44	17					
Total													371	351	6	8	6
Average daily member of Sick 6.51.																	

In my annual reports for the years 1838 and 1839. I have entered so fully into my treatment of most of the diseases, now under consideration, that I have but little to add, I shall therefore, review shortly the more important diseases, entering into the treatment only when this has not been done before.

Medical Practice. The nine cases which remained in Hospital at the end of the preceding year all in time returned to their duty.

Cardiac disease. — The fifteen admissions for cardiac disease occurred among nine men, three having had relapses: in one of these three there was hypertrophy of the heart, and he was transferred to the foot artillery in consequence. The disease generally showed acute symptoms of pericarditis and was caused by excessive spirit drinking and exposure at the same time to wet or cold night air, thus the commencement of the monsoon was an occasion of its increased prevalence. One case only was admitted which was not caused by the abuse of spirits, and it occurred during the heavy rain which fell at Panwell when the Troop was waiting for boats.

Cephalalgia. Two cases were neuralgic and intermittent and were treated as usual with quinine given to anticipate the paroxysms. Two were connected with syphilis, and one of these patients, a man of the fourth Troop was transferred with other sick to the depot hospital of H. M.'s 40th at Kurrachee on the troops marching thence. Almost all the others were effects of drunkenness.

Cholera. Under this head are classed seven cases which approached more nearly to that disease than to any other; six of them occurred at Panwell from exposure to cold and wet, and the other just after our arrival in Bombay. The attack was sudden in its accession — there was vomiting and purging with cramp-like pain at stomach or through the bowels; prostration of strength and coldness of surface with thirst: in one case there was incipient collapse, the dejections were watery but not conjee-like; ammonia with opium were given internally; in several blood was taken from the arm; hot turpentine and blisters to the epigastrium with dry frictions to the extremities. A copy of one of these cases accompanies this report.

Colic and Gastrodynia. — Were generally brought on by cold.

Cynanche Parotidæa. — The two instances of this were in men whose children were suffering from the disease which was then epidemic.

Delirium Tremens.—The proportion of this disease was about the same as in former years. The treatment was the same.

Diarrhœa.—But eight cases are entered in the table, those being all that were admitted into hospital. But on descending the Bhore

Ghat from the Dukhun to the Konkun where the atmosphere at a high temperature was nearly saturated with moisture, a great portion of the men were affected with looseness of the bowels.

To each of twelve who applied for medicine, I gave a dose consisting of magnesia carbon. ʒij pulv : jalapœ gr. xv pulv : ipecac. gr. iss. ol : menth gtt. iij. and without an exception it removed the complaint. Three who did not at first apply for medicine were afterwards admitted for dysentery in which the disease had terminated. At Kudajee in Sinde where, as I have before mentioned, diarrhœa was common, I used the same medicine.

Dysentery. — One chronic case that was mentioned in last year's report as having been sent to the Presidency for change of air, returned without improvement and on our leaving Poona was transferred to the 2nd Troop and recommended to be brought before the invaliding committee. All the other cases that occurred at Poona were of the same character as I had before met with in the Dukhun and described in my reports.

The disease in the Konkun and at Kurrachee was mostly of a more insidious character and attended with less acute symptoms : in four at Kurrachee it was complicated with disease of the liver ; three of these were alluded to in in the preliminary part of this paper and the fourth was long under treatment.

The remedies used were general and local bleeding, ipecacuanha conjoined with small quantities of jalap frequently repeated, or ipecacuan alone and occasional mild purgatives. In cases complicated with hepatitis, calomel was given conjoined with the ipecacuan. The case which was admitted at Kudajee and also a few at Poona were treated with ipecacuan in doses of ℈i or ʒss with tinct. opii. at bed time, and a purgative in the morning. Not omitting venesection when the disease was severe. I have rarely seen the large doses of ipecacuan retained even when tinct. opii. ʒiss has been conjoined.

Dyspepsia and Gastro-Enteritis. — As usual were chiefly the effects of drunkenness.

Enteritis. — But one case occurred, it was severe and required active general and topical bleeding. The patient was only convalescent when the troop marched from Poona — therefore was transferred to the 2nd Troop.

Epilepsy.—One of these cases was a relapse ; both attacks followed continued drunkenness. The other patient was a recruit who had

been sent back from the 3rd Troop when in Sinde he was transferred to his Troop when it returned from service.

Fevers. — I have already referred to the decrease in the number of admissions under this head. One case of remittent fever ended fatally at Kurrachee. In a patient suffering from intermittent fever bloody urine was passed; during the cold fits the fever was obstinate and at last yielded to venesection during the rigors. A copy of the diary of this case is forwarded with this paper. The following shows the types of the forty-four cases of fever.

Continued.	Remittent.	Quotidian.	Tertian.	Ephemeral.
2	8	14	3	17

The eruptive fever which I described in my last report, I met with this year in a solitary instance and that was in a child.

Hæmatemesis.—The vomiting of dark clotted blood occurred on two successive days and then stopped, the man had had a fall on his back five or six days before, and he ascribed the complaint to this cause, none other was apparent.

Hepatitis.—The great decrease of admissions under this head has been made mention of already. The passage of biliary calculi in one case ended fatally from the violence of the inflammation it excited.

Peritonitis. — The patient, a serjeant, was brought to hospital in a state of collapse after having drunk during the day, fifteen drams of spirits (there are forty in a gallon). He had been rather unwell for two or three days, he died a few hours after admission.

Phlebitis. — One of these cases ended fatally it came on after bleeding for inflammation of the liver and was attended with severe fever. The other occurred after bleeding during the treatment of pneumonia, it terminated favourably. Constant fomentations during the day and poultices at night, and leeches, were the chief remedies used.

Pulmonic Disease. — There were five cases in all, viz. two cases of bronchitis, one at Poona during the monsoon, the other at Kurra-

chee in November, two cases of pneumonia, one after exposure to cold and wet at Panwell, the other from the same cause on board the Steamer, and one case of pleuritis at Kurrachee. The principal treatment consisted in general and topical bleeding in all these forms of disease, and in the free use of tartar emetic and ipecacuan in the acute stage, and when the inflammation was subdued, in blistering. All recovered.

Rheumatism. — All were sub-acute or chronic, I have generally treated this disease with tartar emetic in doses of $\frac{1}{4}$ or $\frac{1}{2}$ a grain combined with extract of conium grain iv. or v. every four hours, in the sub-acute form, and with the same combination or with iodide of potassium and extract of conium in the more chronic form with the happiest effect. The conium is a much more efficacious anodyne in rheumatism than either opium or hyoscyamus. A little before leaving Poona, I had received from England some extract of aconite which I had few opportunities of employing, and I found it very useful, especially in a European woman suffering from acute articular rheumatism. In that case I used it uncombined and the disease yielded in a few days : the medicine caused copious diaphoresis.

Spleen. — Some of the cases were men who had been sent to Poona from their troops in Sinde on account of obstinate fever. Two cases were acute and required active treatment; in one of the two the man had received a blow on the spleen which had been for many years enlarged this man's general health being bad, he was unfit to accompany the troop on service. The treatment of this disease was the same as stated in former reports.

No other medical cases require to be mentioned.

Surgical Practice. — *Dislocations and Sprains.* The only case of the former was a dislocation of the head of the humerus downwards and forwards it was reduced by means of pullies. Among the numerous patients with sprains one from repeated injury to the ligaments of the ankle joint lost the free use of it and thus being unable to mount and dismount quickly he was left with the 2d Troop with a recommendation that he should be transferred to the foot artillery.

Fractures. — Two of the fractures were from falls on the steps at the doors of the barracks in Poona. A very abundant source of injury to the men when drunk, from their imperfect construction in not being long enough or curved backwards to meet the wall on each side of the door ; as they are at present, many fall down their abrupt side. In these two cases the bones fractured were a rib and a

fibula, the former was treated by restraining the motion of the ribs by a broad bandage round the chest. The fractured fibula only required the limb to be kept at rest. Another fracture was of the clavicle caused by a fall from horseback; the fractured ends were kept in place by Brasdor's bandage. The fourth case was a fracture of the lower jaw near the angle and also at the chin, the broken ends were kept in apposition by silk ligature tied round the teeth and a paste board splint moulded when wet to the jaw; the fracture was received in falling.

Rupture of Muscular fibre. — Some fibres of the right rectus abdominis muscle were ruptured in riding hard up and down the Bhore Ghat on duty when the Troop was descending. A day or two after the injury the patient suffered very severe pain. Local bleeding and rest were requisite.

Syphilis and Gonorrhœa. — The number of admissions for these diseases was less than half what it had been the previous year. The treatment has not been changed.

Summary of Cases — Which occurred among the troop followers chiefly natives.

Fractures.— One Compound fracture of ossa nasi in a ghorawala from the kick of the horse, the fragments of bone were elevated.

One simple fracture of left radius close to the wrist from a fall from horseback.

One simple fracture of right radius and ulna from a fall from horseback.

One compound fracture of eight radius and ulna from a fall from horseback.

One smple fracture of left tibia from the kick of a horse.

These four last cases were treated with splints. All terminated successfully.

One compound transverse fracture of right patella from the kick of a horse. When the man was brought to hospital the probe passed between the fragments of bone to the back of the joint. The limb was kept fully extended on a splint and thigh bent on the body. By leeches and cold lotion the violence of the inflammation was subdued. The fragments united closely and the man recovered without stiffness of the joint.

A Gunshot wound of the ear and cheek by a musket ball in a native boy on the ball practice ground. The meatus auditorius was di-

vided, but the integuments above and below the wound connecting the ear with the head were undivided : the wounds were rapidly healing when we left Poona.

Poisoning with Opium. — In a native woman proved fatal. A stomach pump was borrowed and used but it was too long after the poison had been taken.

Tetanus. — A case of idiopathic tetanus occurred in a native on the march to Panweli, the paroxysms chiefly affecting the muscles along the spine came on so suddenly as to throw him down while walking. He was sent back to Poona.

At Poona during the year I met with two cases of tetanus in women a fortnight after parturition, one of the patients only had had any difficulty in delivery. In one the disease ended fatally. I tried freely the extract of cannabis indica, but it had little or no effect. In the other case also I tried it for some days, giving ten grain doses of the alcoholic extract, three or four times a day without benefit, the woman then refused to take any medicine and finally the disease went off spontaneously.

Intermittent Menorrhagia — of tertian type in an Indo-Briton, the wife of a soldier of the troop, the complaint was cured with quinine given in repeated doses close on the expected time of return.

In Obstetric Practice. — *Presentation of the Arm.* The child's forearm had been pulled off at the elbow in forcible attempts to deliver the woman before I was called in. The patient was a native. I delivered by turning and the woman's life was saved.

Presentation of an arm and the funis. — Here also the child was dead, I turned the child and delivered the woman. She recovered speedily. She was a native.

Hydrocephalus in the child and the face turned to the pubes.—Here also I turned the child which I then found was dead ; not being yet able to extract it, I lessened the head with the perforator and delivered the woman. The mother, a native, recovered soon.

Adherent placenta removed ; the cord had been broken short off.

Flooding after delivery of great severity terminated favourably

There were two patients with scirrhous disease of the uterus for whom I could do but little.

Among the children of the soldiers the epidemics of the year were cynanche parotidæa and pertussis.

Nominal List of Men of 1st *Troop Horse Brigade, who have died in Hospital, from* 1st *January to* 31st *December*, 1838.

Names.	Ranks.	Present age.		Period of service in India.		Country.	Disease.	Date of		Duration of disease.		Appearance on Dissection.
		Years.	Months.	Years.	Months.			Admission	Decease.	Months.	Days.	
John Evans . .	Serjeant.	37	..	18	..	Wales.	Cholera.	20 Feb 1838.	20 Feb 1838.	..	1	Both ventricles of the heart full of blood, some venous congestion in the lungs. The Liver was enlarged and speckled.
John Cherry .	Gunner	24	..	1	4	England.	Small Pox	20 Feb 1838.	2 Mar 1838.	..	10	The arachnoid membrane in part thickened and opaque. The ventricles of brain filled with serum. The lining membrane of larynx inflamed and covered with paste like matter.
Robert Simpson	Bombardier.	38	..	17	..	Scotland.	Hepatitis.	15 Mar 1838.	1 Apr. 1838.	..	17	In concave side of the right lobe of liver a large abscess whose walls at one part bore evidence of having long existed; at other parts they were ragged and without any adventitious lining membrane. The cellular membrane round the Hepatic vessels was condensed and hard.

Nominal List of Men of the 1st *Troop H. B. who have died in Hospital, from the* 1st *January to* 31st *December*, 1839.

James Urquhart	Gunner.	36	..	15	10	Scotland.	Fever.	18 Mar	27 Mar	..	10	Thickening of arachnoid and serum in ventricles of brain.
Mich. Dunford	Do.	32	..	11	10	Ireland.	Phthisis pulmonalis.	28 Jan 1839.	12 Mar	4 Years.	..	Right lung with tubercles in upper part. Left being nearly all destroyed by suppuration.
James Quinn .	Do.	30	..	9	3	Do.	Paralysis.	28 May 1839.	11 Jul	$2\frac{1}{2}$	..	Right hemisphere of brain had middle and posterior lobes pultaceous.
4. Troop H. B. George Jones .	Farrier.	36	..	13	9	England.	Hepatitis.	28 Mar 1839.	3 June	Unknown.		Abscess in left lobe of liver; the neighbouring substance degenerated.

Nominal List of Men of the 1st *Troop H. B. who have died in Hospital from, the* 1st *January to the* 31st *December,* 1840.

Names	Rank.	Present age.		Period of service in India.		Country.	Disease.	Date of		Duration of disease.		Appearance on Dissection.
		Years.	Months.	Years.	Months.			Admission	Decease.	Months.	Days.	
Michael Corbett	Serjeant.	31	..	9	9	Ireland.	Peritonitis.	Feb. 29 1840.	Feb. 29th. 1840.	Probably 3		Peritoneum covering paries and viscera inflamed, 2 or 3 lbs. of opaque serum with flakes of lymph in the abdomen.
John Power . .	Gunner.	28	..	9	1	Do.	Phthisis.	March 15 1840.	April. 2 1840.	..	15	Thickening of coats of veins of the arm and bend of elbow with close union to surrounding cellular tissue. Basilic. v pervious, median Basilic and median Cephalic, impervious, Cephalic in part containing pus the rest impervious. Lining membrane of vena cava and heart pink coloured; serum in pericardium. Serum on surface of brain.
Thomas Roberts	Serjeant.	31	..	11	1	Do.	Biliary Calculi.	June 26 1840.	June 29 1840.	..	2½	Lymph effused on and in neighbourhood of gall bladder and duct; adjacent substance of liver inflamed. Gall bladder distended, its coats thick and hard; mucous lining highly inflamed and stained black contained black friable calculi. Duodenum highly inflamed.
John Holland .	Gunner.	30	..	8	6	England.	Fever.	Oct. 27 1840.	Nov. 7 1840.	..	12	There was not convenience for dissection.
Michael Quiley	Do.	45	..	19	6	Ireland.	Dysentery.	Nov. 18 1840.	Nov. 27 1840.	about	22	Peritoneal coat of small intestine inflamed a little lymph effused. Large intestines bound to neighbouring parts by lymph abscesses in their walls. Mucous membrane already separated or in sloughy patches; invagination of left end of transverse colon. Liver with corrugated surface; two abscesses in the right lobe.
William Griggs	Do.	36	..	11	6	England.	Dysentery.	Nov. 18 1840.	Nov. 27 1840.	about	14	Cæcum and ascending colon a mass of disease tearing on being handled. Abscesses in their walls and between the transverse arch and omentum: nearly cartilaginous ring at each end of transverse arch. Mucous membrane throughout the large intestines, highly inflamed sloughy or separated; liver, enlarged left lobe adherent to diaphragm; two abscesses in it and two in the right lobe; greater part of substance of the liver degenerated speckled yellow and red. Both lungs adherent to pleura costalis.

Article IV.

Statistical Review of the climates of the principal Stations for European Troops in the Bombay Presidency. By R. H. A. Hunter, Esq. H. M.'s 2d or Queen's Royal.

Presented June, 1841.

The principal stations for European troops, in the Bombay Presidency, are three, the Presidency comprising the fort of Bombay and island of Colaba; Poona; Belgaum; and Deesa.

The first is peculiar for its even high temperature, the thermometer seldom rising above 88° or falling below 76°. From its low insular situation, also, near the level of the sea, its atmosphere is always moist, and particularly during the rainy season, from June to October, when it is almost impossible to keep any thing from rust or mould. The average fall is about seventy inches. During the dry months the chief wind is the sea-breeze, and during the rainy season the south-west monsoon. There is also a land breeze in the morning from November to May, but it is generally weak, and always soft and tempered. The prevailing diseases at this station, are cholera, diarrhœa, dysentery, bronchitis, hepatic abscess, and a severe kind of gastric and gastro-hepatic, remitting fever, and nearly in the order herein mentioned. From December to April, it is seldom, a European regiment loses more than two or three men. In May and June, cholera is frequent and fatal: also, in Colaba, during the first ten days of July. In May, diarrhœa is also very prevalent. In June and July, true dysentery or colitis. In July and August, bronchitis. In August, hepatic abscess; and in October and beginning of November, gastric remittent fever. Diseases of the heart and aorta are also fatal, as are all the varieties of tubercular disease in the rainy season; and in the cold weather, purpura is not unfrequent, in Colaba, at least.

The comparative mortality by dysentery, cholera and phthisis, exceeds that of any other station, whilst in most other diseases it is more than equal. Belgaum perhaps is an exception with regard to liver, and Deesa with that to fever and coup de soleil.

Our means of proof are limited, but adopting the form in Major Tulloch's statistical reports, we have framed tables 1, 2, and 3, from the mortality in the 2d or Queen's Royal Regiment, during the years 1831, 2, 3, and 6. The first from the official returns, the others cor-

rected from privates notes. A comparison of these may also account for some of the discrepancies alluded to by Major Tulloch, between the reports of the medical officers, and their official returns.

The second, Poona, one thousand eight hundred feet above the level of the sea, and sixty miles or so inland, having high Ghats intervening, is comparatively dry with a much greater range of the thermometer, the extremes being 55° or under and 96° to 98°, and the average fall of rain at least two-thirds less, or about twenty inches.

The third, Belgaum, two degrees further south, two hundred or three hundred feet higher and something nearer to the Ghats, has nearly twice the quantity of rain with a lower and steadier temperature, the annual extremes being about 60° and 92°.

But what constitutes the greatest difference in these two climates, is the cold easterly winds at Belgaum in December and January, and the hot winds at Poona in March and April. During these last at Poona, a soft sea breeze blows all the afternoon at Belgaum bringing this climate to something like that of Mahabuleshwar at this season, allowing for the difference of altitude. It is however more sheltered. In the rains, Belgaum is more boisterous than Poona, and these set in and cease with greater violence, generally with tremendous thunder storms. The rains also begin a month earlier and continue a month or so later, but these consist chiefly of the thunder storms and generally towards evening or in the night.

Between the diseases incident to these climates, there is also a similarity, or rather, deducting the Poona gastric fever of October and November, those of Belgaum are only an exaggeration of the other. Bronchitis is nearly the same in both ; dysentery and rheumatism are worse in Belgaum ; and hepatic abscess rare at Poona, at least so the Queen's Royal found it, is frequent in the cold weather, whether during the dry or rainy season.

Tables 4 and 5 have been framed from the mortality in the Queen's Royal, at these stations, corrected from private notes. The strength may be considered too small to form a just conclusion ; in respect to Belgaum, this is the case, but with regard to Poona, we have been favored through the kindness of Dr. Jackson of H. M. 6th, with an abstract of the annual mortality and strength of that regiment for a period of four years, to which we added the above two, and the five years the Queen's Royal were previously at Poona, which gave an aggregate strength of 9,731, and the annual proportion of deaths, 22.2 per 1000, instead of 21.8, a difference scarcely appreciable.

Deesa, six or eight degrees farther north, just out of the tropic, and about one thousand five hundred feet lower, being very little ele-

vated above the sea, from which it is distant about one hundred and fifty miles, partakes something of the character of both these climates, only of course with a much greater atmospheric pressure. Poona it resembles, in the hot winds and high temperature. It has less rain however than Poona, the average fall being about twelve or fourteen inches, and the annual range of the thermometer greater, the extremes being 50° or under, and 108° to 110°. It chiefly resembles Belgaum in the cold winds during December and January, but with a higher diurnal temperature, that of Belgaum being about 75° as the maximum, that of Deesa 83°.

The principal diseases met with at this station, are fevers of the remitting and well marked intermitting types, gastritis, enteritis, dysentery, cerebritis and coup de soleil. Gastro enteritis and cerebritis are generally the accompaniments of the fevers, the former in the cold, the latter at the close of the hot, season, and dysentery the sequel. True idiopathic colitis is perhaps rare.

The great mortality here is caused by the complicated fevers, of which the most fatal is the gastro-catarrhal (bronchitic) but it is also the most rare. The next is the gastro-enteric : this is also the most frequent —and least of all, the enteric. In this last which in the cold weather, is frequently of the intermitting type, the acute pain along in front of the right cartilaginous border, the resonance of the part being plus, with tenderness, is often so intense, as to " double them up " as they express it, and even to mask the fever altogether for one or two periods.

Agues prevail chiefly in December and January, remittents at all other seasons. These last are at their acme in August and September towards the close of the rains, and are then accompanied with extreme prostration, and marked tendency to petechiæ and purpura.

The dysentery of the cold weather, enteritis and other inflammatory gastric ailments, may be compared to those at Belgaum at the same season, only at Deesa hepatic complications are rare. Coup de soleil occurs chiefly in the beginning of June. Table 6 has been framed from the mortality in the Queen's Royal at this station for one, rather bad, year, which would have been quite inconclusive had we not through the kindness of Deputy Inspector General Loinsworth and Dr. Jackson, H. M. 6th, obtained abstracts for five full years, also of the 6th and 40th Regiments, which, in all, give an aggregate strength of 4,393, and the annual ratio of mortality 49.6, instead of 55.4, a smaller difference than we had anticipated. We think however this is still too high. Looking over the tables, the difference between Deesa and Poona would seem to be caused solely by fever

and its sequels. We should say therefore, Deesa, fever, 12 (last was an unusual year); sequels, stomach and bowels, 5 ; brain 3 ; total 20. All other diseases including, dysenteric and cerebral affections *not* sequels of fever, 22, the same as Poona or Belgaum, or in all per thousand annually, 42, Deesa has hitherto, as far as I know, enjoyed nearly a complete immunity from epidemic cholera.

On a review of these climates we find that of the Presidency, the most equably warm and moist, and at the same time the most inimical to Europeans from June to December, or when the moisture is excessive, but the most healthy from December to May, or during the dry season. We except in regard to cholera.

Referring to Major Tulloch's statistical reports, the climate which comes nearest to this would appear to be some of the West India islands, or perhaps Demerara and Berbice still nearer, but for their greater moisture. Between any of these, however, and Bombay, it is impossible to draw a just comparison, owing to the very great prevalence of maglignant fevers in the West Indies. The average mortality by this class of diseases being 37 per 1000 of strength, whereas in Bombay it is certainly not more than 5. This particularly applies to the class, "affections of the stomach and bowels," the greater number of these not only in the West Indies, but even here, if we include those associated with hepatic abscess, depending upon the fevers. Indeed when we examine Major Tulloch's tables, — he mentions it himself, we find that but for the 2d, Queen's Royal in 1817 and 18, the average mortality for the twenty years would not have been one half in St. Vincent's and Grenada, and if we deduct these and another out of the way proportion in 1837, possibly from a similar cause, we have the comparative mortality in the former, 10.5 per 1000 of strength, instead of 24.2, and in Grenada 7.8, instead of 16.1 so that it would be difficult to estimate the difference.

We think after all, more may be gained by observation, and as the result of ours, we would say, a high temperature is essential to give the predisposition to dysentery, but that pure uncomplicated colitis, the dysentery which prevails in June and July in the Bombay presidency, is more or less prevalent according to the degree of moisture, exposure to bleak winds, and crowded state of barracks, the latter rendering the body more susceptible. It is perhaps a curious fact that I have only met with one unequivocal case of this dysentery in an officer in ten years, out of an average strength of thirty or upwards, and that was mild and yielded readily to treatment.

The gastro-enteric and hepatic dysenteries we would refer todry

cold, rather ; the predisposition having previously been given also by a high temperature, and fevers of the intermitting and remitting types. They are particularly prevalent on a change of climate from low confined moist situations to high lands and bracing winds, and especially if fever has been prevalent at the former.

Both Fort George and the Town barracks, the Queen's have always found healthy with only one wing, 350 to 400 men, the bombproofs in the latter being given up to the married people. In 1832 the wing in the Town barracks, lost only one man in six months, and that was by cholera. It is true, one or two sent over from thence with chronic disease, died in Colaba, and even in 1833 when we were unusually crowded, though the mortality in the whole regiment amounted to upwards of fifty for the year, only fourteen died out of by far the strongest wing in the four monsoon months, and of these, eleven by cholera. The other three were, fever, one ; dysentery, one; rupture of the heart, one. Cholera, was equally fatal on Colaba. In the Town barracks five of them died in one day. I have no doubt it originated in the hospital, a part of the barracks, merely half matted off from the rest. We were extremely crowded, whereas on Colaba they had abundance of room.

The Town barracks we think from their being dry and sheltered, would always be found the most healthy at the Presidency during the rains, provided an hospital were attached and the ventilation improved, the latter of which could be easily done. The bombproofs below, however, are extremely fatal to children.

Demerara and Berbice in the West Indies, low and sheltered on the main, though fever is there also very prevalent, give a much less comparative mortality by affections of the stomach and bowels than the islands, where the chief object in the selection of a site for barracks has been to get out of the way of the fevers by building on elevated situations, or such at least as have a free exposure to the trade winds.

Diseases of the lungs, consumption particularly, seem to be much under similar influence, and we remember when in Barbadoes in the end of 1829, the 86th Regiment in the old barracks, on an elevated site overlooking the sea, were losing one or two weekly by this class of diseases; whereas the 19th in the new, a little retired into, what was a swamp, when the Queen's Royal were quartered there, were not losing one.

Compare again Demerara and Berbice with the islands and with Bombay, take consumption for instance, Bombay and Colaba, 3.3; Demerara and Berbice, 4.4 ; Grenada, 5.2 ; St. Vincent's, 5.5 ; Bar-

badoes, 10.7; or Canada with the Bermudas and England, Canada, 4.5; England, 6.4; Bermudas, 7. or the Cape of Good Hope Frontier with the Cape and Mauritius, Cape Frontier. (inland,) 1.2; Cape, 2.4; Mauritius, 3.1;

If these principles be admitted, the idea of building barracks upon more elevated sites is founded upon error, such situations only tending to increase the mortality by consumption and diseases of the stomach and bowels; whilst under two thousand feet, where they have been tried as in the West Indies, Sierra Leone, &c. they have in no way diminished that by fever, were this last even an object at Bombay.

Belgaum the next in equability of temperature and degree of moisture, and holding a middle rank in the dry season at least, between the climates of the low country and the hill convalescent stations, is the next we shall consider. Here we find in the cold weather it is inferior to Bombay, and particularly with respect to hepatitis, bronchitis, enteritis or dysentery, perhaps, and dyspepsia, the latter of the inflammatory gastric species.

Belgaum we find least healthy when most cold, whether united with drought or moisture, and most healthy when warmest, whether in the dry or rainy season.

Poona, a drier and upon the whole a considerably warmer climate than Belgaum, at all seasons during the day, though in the cold weather the thermometer does perhaps fall a little lower towards morning, is the healthiest of all, and little inferior to England and her North American possessions. The fever we believe to be strictly local. It is that which keeps the proportion of sick comparatively high at this station, though it does not add more than two or three to the annual proportion of deaths.

These are tried climates, but between, we have the hill convalescent station of Mahabuleshwar; would any advantage accrue to the service from having a European cantonment there, (we allude to Panchgunnee,* for Malcolm Pait would not be habitable during four months of the year.) In this we think two questions at least are involved, but what we shall now only consider is, whether the mortality in a European Regiment would be likely, to be diminished by being stationed there, rather than at Poona or Belgaum. We think scarcely; for on looking over the tables, we see no class of fatal diseases, which could be expected to be less prevalent than at either of these last stations, except fever perhaps and diseases of the brain, amount-

* V. Transactions Medical and Physical Society of Bombay, No. III. Page 212.

ing in all to 4 or 5 per 1000 of strength annually, whilst we might expect a considerable increase by liver, consumption and dysentery; for it must be admitted, compared to Poona, Panchgunnee possesses most of the bad properties of Belgaum united to some of those of Bombay. We allude to excessive (comparatively) cold and moisture.

To this may be objected Maroon town in Jamaica, a similar height above the low grounds, and with a similar annual fall of rain, but here we suspect the greater prevalence of malignant fevers is the cause, and after all the difference is not great. Take away that by fever alone, and the comparative mortality would be as 34.4, low grounds to 32.7, Maroon town at an elevation of two thousand feet. Fever on the contrary, is as 101.9 to 15.3 making the total difference as 121, to 32.7. Of course in a climate of this kind, there could be no doubt upon the point, or even, if the mortality at Poona by fever amounted to 10 or 15 annually per 1000 of strength, but when it does only to 2 or 3 we leave a climate which can scarcely be surpassed within the tropics for one, at least, which is untried.

Besides we have reason to believe that Poona is even more healthy than the tables shew, a considerable portion of the mortality being caused by reliefs from the low countries, often not well considered; and at Panchgunnee, the loss by this cause would certainly not be less. Again, the annual fall of rain on the low grounds of Jamaica and of Maroon town are nearly equal, whereas that at Panchgunnee is me than double that at Poona.

But perhaps, the comparison ought rather to be drawn with the coast than with Poona or Belgaum, and then the point would be settled in the affirmative at once, for the mortality on the coast would seem to be at least twice that of the eastern side of the Ghats. At Deesa we have two seasons which exert a malign influence over the health of Europeans, in addition to the rainy season which is universally unhealthy. These are, at the extremes of heat and of cold, both united with excessive drought; the first in the production of apoplexy, cerebritis and coup de soleil; the last in that of enteritis, dysentery, and other gastric ailments. The cause of the fever is no doubt local, depending upon the nature of the soil of the climate. The Eastern Frontier of the Cape of Good Hope would seem, by Major Tulloch's reports, to resemble Deesa much in elevation, temperature, and quantity of rain, yet the mortality by fever there, as indeed by all other classes of disease, is extremely low. When we look to the nature of the soil, however, we find water every where near the surface at Deesa, insomuch that a well might be had in every garden. They are very common, whereas on the Cape Frontier, this is quite the reverse.

Fifty miles from Deesa is mount Aboo, a famous table land, three

thousand or four thousand feet above the level of the sea. Would any advantage be derived from having the military cantonment removed there. Taking the question simply as one of comparative mortality, for we admit there may be others of still greater moment, we have no doubt there would, for though Aboo might possess no advantage over the other hill stations, it certainly would over the plains of Guzerat and Marwar in respect to fever, a disease which at Deesa is either the remote or proximate cause of greater mortality, perhaps, than all others united.

An elevation of two thousand feet grants a very marked immunity from fever, if it does not altogether extinguish it,—witness Maroon town in Jamaica. It would in fact, be a removing from Guzerat to the Deccan, or to those who are acquainted with Ceylon, from the seven Korles to Khandy. It is true, we might expect the mortality by consumption and liver to be considerably increased, say, united, 5 per 1000 annually, or even more the first year of a regiment; but, here much of course would depend upon the care taken in selecting the proper periods for relief. Fever, however, we find is 15 to 20 per 1000 and its sequels 8 to 10 exclusive of invalids; but say 20 in all, from which deduct the estimated increase by liver and consumption, and we have a saving of at least 15 lives annually per 1000 of strength. This we conceive to be a very moderate calculation.

We might now close, were it not that another question presents it self, that is, whether the constitution of troops quartered on the hills or on the coast would be in the most favourable state for undergoing a campaign in the low country. This is a point which experience only, perhaps, can determine, but as the result of several changes up and down within the last ten years, we have no hesitation in saying the former, for we have never witnessed bad effects from a sudden change from the high to the low country, or from a colder to a warmer climate, except once, from Beloochistan into Cutch Gundava, in November 1839, and that was an extreme case, whereas, we have almost invariably, from a warmer to a colder. The reason perhaps is, that habit enables them better to resist cold, the exciting cause of liver and dysentery, the diseases by which the increased mortality is created, whilst at the same time the lower temperature of the hills has rendered them less susceptible. The mortality by consumption might possibly be increased, but for pneumonia and pleurisy, the degree of cold within the tropics, seems scarcely sufficient to give the predisposition; at least, we have never witnessed an unequivocal case of either originating south of the Indus, and even in Affghanistam we never met with pneumonia, till towards the end of the year, when the thermometer had begun to fall below the freezing point

In the following conclusions then, we think we may sum up. 1st. That the most healthy stations for European troops are the table lands, stretching east from the Ghats, sufficiently removed from these to reduce the annual fall of rain to thirty inches or under, and yet not so far as to get into the fever districts, that the second are the Hill stations, and last the low country coast.

2d. That the stations of Poona and Belgaum, in the Bombay Presidency, are in point of locality every thing that can be desired, and therefore that all European troops, not elsewhere required, should be cantoned at one or other of these, or some similar intermediate point, where with due care in making the reliefs from the low countries, the mortality would little exceed that of England.

3d. That only what are absolutely required should be kept at the Presidency, and these quartered during the rains in the Town Barracks, the ventilation of these being improved, and a proper hospital attached, and in the dry weather on the Esplanade or Colaba. The last is the best, and.

4th. That if the North Western Frontier station could be removed to Aboo, leaving at least only what are absolutely wanted at Deesa, there would be a saving to the service of 15 lives annually per 1,000.

Comparative Mortality, in H. M. 2nd or Queen's Royal Regiment in the island of Colaba and Fort of Bombay, during the years 1831, 2 *and* 3, *exclusive of Detachments; and agregate average strength for the three years,* 2389.

Average Age, 27. Average period in India, 6 years.

No. 1. By Official Returns.				No. 2. Corrected by private notes.			
Diseases.	Total Died.	Per 1000	Class per 1000	Diseases.	Total Died.	Per 1000	Class per 1000.
Pleuritis.*	1	.4	6.6	Pleuritis	..	..	3.7
Consumption . .	12	5.		Consumption . . .	8	3.3	
Chronic Catarrh . .	2	.8		Pulmonary Apoplexy	1	.4	
Asthma	1	.4		Rupture of Heart .	1	.4	2.
Cardiac Disease . .	2	.8	1.2	Cardiac Disease . .	3	1.2	
Thoracic Aneurism.	1	.2		Thoracic Aneurism.	1	.4	
Total Thoracic .	..	..	7.8	Total Thoracic .	..	..	5.7
Fevers	7	2.9	2.9	Fevers	9	3.7	3.7
Hepatic	5	2.1	2.1	Hepatic	3	1.2	1.2
Stomach & Bowels	20	8.2	8.2	Stomach & Bowels	18	7.5	7.5
Brain	8	3.2	3.2	Brain	9	3.7	3.7
Cholera	37	15.5	15.5	Cholera	37	15.5	15.5
Other Diseases . . .	1	.4	.4	Other Diseases † . .	7	3.2	3.2
Total per 1000	"	"	40. 1	Total per 1000	"	"	40. 5

* This was a mistake.— The man died in the European General Hospital, of the effects of exposure to the sun during the Parsee riot; and Pleuritis was read for Phrenitis.

† "Other Diseases" — Of these two were Cachexia from confinement in cells, rheumatism &c. Phlebitis, one; Purpura, one; Splenitis, one; (nothing found on dissection); and one or two on the arrival of the Regiment at Poona in December 1833, neither of whom I saw, not having then been doing Hospital duty.

N. B. Two died in Barracks, of "Ruptured Blood vessel," not included.

No. 3. — *Comparative Mortality, in H. M. 2nd or Queen's Royal Regiment, from* 1*st June to* 31*st December,* 1836, *the first five months in Poona, the last seven in Fort George, Bombay. Corrected by private Notes.*

Average Strength, 719. Average Age 31. Period in India, 10½.

Diseases.	Total Died.	Per 1000	Class per 1000.
Pleurisy*	1	1.3	4.1
Consumption . . .	2	2.8	
Cardiac Disease . .	4	5.5	6.8
Thoracic Aneurism.	1	1.3	
Total Thoracic .	..	..	10.9
Fevers	1	1.3	1.3
Hepatic	4†	5.5	5.5
Stomach & Bowels.	5‡	6.8	6.8
Cholera	1	1.3	1.3
Other Diseases . .	1	1.3	1.3
Total per 1000.	"	"	27.1

No. 4. — *Comparative Mortality, in H. M. 2nd or Queen's Royal Regiment, at Poona, during the years* 1834 *and* 35.

Aggregate Strength, 1395. Average Age, 30. Period in India, 9.

Diseases.	Total Died.	Per 1000	Class per 1000.
Inflammation of lungs (questionable this)	1	.7	2.8
Consumption . . .	3	2.1	
Cardiac Disease . .	4	2.8	4.2
Thoracic Aneurism.	2	1.4	
Total Thoracic .	..	..	7.
Abdominal Aneurism	1	.7	.7
Fevers	3	2.1	2.1
Eruptive Fevers.	2	1.4	1.4
Hepatic	4	2.8	2.8
Stomach & Bowels.	5	3.6	3.6
Brains	3	2.1	2.1
Other Diseases . .	3	2.1	2.1
Total per 1000.	"	"	21.8

* Chronic, contracted off the Cape of Good Hope.

† Except one, sequels of fever — ‡ One or two, sequels of fever.

No. 5. — Comparative Mortality in H. M. 2nd or Queen's Royal Regiment at Belgaum during the years 1837 *and* 38.

Aggregate strength 1399. Average Age 32. Period in India 13.

Diseases.	Total Died	Per 1000	Class per 1000
Consumption.	2	1.9	1.9
Cardiac Disease . . .	2	1.9	3.9
Thoracic Aneurism. .	2	1 9	
Total Thoracic . .	"	"	5.7
Abdominal Aneurism.	1	.9	.9
Fevers	1	.9	.9
Hepatic *	11	10.4	10.4
Stomach and Bowels .	4	3.8	3.8
Cholera	1	.9	.9
Other Diseases . . .	1	.9	.9
Total per 1000	"	"	23.5

No. 6. — Comparative Mortality, in H. M. 2nd, or Queen's Royal Regiment at Deesa, from 1*st April,* 1840, *to* 31*st March,* 1841.

Corrected.

Average strength, 882. Average Age, 26 years. Period in India, 4½ years †

Diseases.	Total. Died	Per 1000	Class per 1000
Pulmonary Diseases. .	2	2.2	2.2
Cardiac and Aortic . .	3	3.4	3.4
Total Thoracic . .	"	"	5.6
Fevers	18	20.4	20.4
Hepatic	3	3.4	3.4
Stomach and Bowels .	13	14.7	14.7
Brain	6	6.8	6.8
Other Diseases . . .	4	4.5	4.5
Total per 1000	"	"	55.4

* Most of these are under "Dysentery," in the returns, and perhaps with equal propriety (Hepatic Abscess with Dysentery), Three or four are under "Fevers."

† 500 Recruits under 2 years in India.

Article V.

On the Jungle fever of Candeish. Extracted from the annual report of the 15th Regiment N. I. for the year, 1840. By A. Graham, Esq.

Presented by the Medical Board, April 1841.

General Observations. — In my last year's report, I entered, at some length, into the causes and effects of *Jungle Fever*, and I then adduced some well authenticated statements of fatal cases of this disease, in order to show the impropriety of exposing troops to the influence of certain noxious agents present in the jungles at a certain season, where such exposure is not absolutely required by the exigences of the service.

The observations made by Lieut. Colonel, now Major General Briggs, during the years 1815 and 1825, and also those made by myself at a later period, incontestably prove that during the months of October and November, (particularly October) when vegetation is extensively decayed and water has become stagnant, the disease is both most prevalent and most malignant, — so malignant, indeed, that in the comparatively few instances from which death does not immediately result, there remains so much functional disturbance and perhaps, so many organic changes, as to render the soldier unfit for the due performance of his duty.

I am under the painful necessity of again alluding to this subject in reporting upon the medical state of the 15th Regiment N. I. during the last twelve months, as during the latter part of this period I have had, under my care, three sepoys labouring under visceral disease in consequence of fever contracted in October last, when these sepoys and a naique (all now in hospital) were sent in charge of a deserter through the jungles which lie between Dywell and Soneghur, on the road leading from Malligaum to Surat. These are the same jungles through which, in November 1839, only a year before this occurrence, a naique and six sepoys were sent in charge of horses from Malligaum to Surat. Of this party all were seized with fever: one poor man became deranged, and wandering about the jungle, soon died, and of the five who lived to reach camp, only three recovered, the two remaining were long in overcoming the sequelæ of the fever.

Colonel Briggs states (and his statement which, I formerly quoted, I now wish to bring again to the notice of the Medical Board) that in the same forest, in the year 1819, a detachment of fifty sepoys and an European officer passed to Surat in September and returned in October. The whole of the sepoys were affected with fever and the European officer died. In the following year sixty men performed the same duty at the same season, nearly all of whom died. The Officer escaped, after a lingering illness, with his life.

At the same time, also, a detachment of H. M. 67th. Foot, consisting of five officers and twenty-two privates, marched from Surat to Candeish, of whom one officer and a private only survived; the whole of the rest died within a fortnight of their arrival at Head Quarters of the Regiment. All the Europeans who have passed by this route, within the last nine years, in the unhealthy months, have invariably died. The disease which affects them is a violent bilious remittent which usually carries off the patient in a few days, in spite of the earliest and most skilful medical aid.

It is much to be lamented that these remarkable facts, although officially reported to Government by Colonel Briggs, should not have led to the prevention of subsequent calamities of a similar nature. In 1830, four hundred native troops, marched from Malligaum against some tribes occupying the neighbouring hilly country, after a compaign of between two and three months, during the most unhealthy season, only one hundred and twenty out of the four hundred marched back into camp; of five European officers, one died, three went away sick, one to England, and two, to the Neilgherris. During the campaign many horses got distinct hot and cold fits of fever, and ten out of about a hundred died.

These facts have been communicated to me, by Captain Douglas Graham, who was one of the officers employed on this service. The Assistant Collector of Candeish has mentioned to me, that on one occasion the villagers sent in all the muskets of the Kookurmoonda detachment, the whole of the party having perished in consequence of fever.

To enumerate the many fatal and lamentable cases, hitherto only locally known, in which this disease has occurred, would fill a long paper on this subject, and as my present report is of a general nature, I must content myself with expressions of my deep sense of the vast importance to the service and to humanity, of investigating the circumstances, under which jungle fever occurs, so as, to ascertain its causes and to enable us, if not to withhold the sepoys from these causes of fever, at least, to modify their effects.

In January of the last year, six hunderd recruits for general service, traversed the last jungle alluded to by Colonel Briggs, betwixt Malwa and Candeish; several officers had passed through the same tract, at the same time, with impunity. These recruits slept on the ground, and after marching during the heat of the day, were exposed to the intense cold of the night; several of them, however, had warm quilted cotton jackets, and thus escaped fever or had it only slightly. On their arrival at Malligaum, nearly sixty were admitted into hospital; some of these poor men had suffered for several days and were beyond the reach of medical aid when they arrived; only seven of the number died. The complication was chiefly bronchial of a very intense character. The bronchial membrane had become swollen, and the air cells filled with secretion: the blood was thus deprived of its due proportion of oxygen, and the effects of unoxygenated blood were apparent upon the brain. One man died delirious on the day of his arrival without our being able to give him any medicine. In the worst cases, scarcely any pulsation at the wrist could be discovered, the surface was cold, dry and rough, the function of respiration was much impeded, the whole of the muscles, attached to the thorax, being called into action to expand the chest without the power to effect it, and yet there was no local pain.

In the progress of the disease, the air cells were ruptured, and their connecting tissues, and thence, the air without rupturing the bronchial lining escaped by the root of the lungs to the cellular membrane of the thorax, forming emphysema of the neck, face and around the clavicles.

Hœmorrhages of a dark corrupted blood occasionally took place from the nose and throat. In one or two cases deafness occurred. Where disease of the cerebrum was superinduced, the tongue was rough and dry, and broken into furrows: when the abdominal complication prevailed it was smooth, dry and glossy.

The form of jungle fever in October and November, seems to be bilious intermittent and remittent, owing, no doubt, to the great congestions which take place in the splenic and portal circulation, again, as the cold season advances and becomes more intense, the jungle fever assumes the character of gastro-enteritis, and bronchitis, and eventually, as the cerebrum becomes affected a typhoid fever is superinduced. In these jungles, in October and November the exhalation from decaying vegetation is very extensive, and putrid matter fills the waters.

On the tanks, and wells and nearly stagnant rivers, a dark substance like floating oil abounds. It has also been stated that a poi-

sonous vegetable exists on the banks of some of the streams, and, after the rains, impregnates the river with its noxious qualities. In all the waters of Candeish the natives are known to steep hemp after the rainy season; putrifaction and animalculæ must therefore abound in this essential necessary of life, no doubt proving a great cause of disease. Animalculæ alone are said by Dr. Copeland, when received into the circulation, to cause fever. Majendie and Dr. Gaspard state, that both putrescent animal and vegetable matters, when injected into the blood vessels of the inferior animals, occasion phenomena strikingly analogous to those exhibited on the human subject labouring under malignant fever. These putrid substances introduced under the skin, as well as into the blood, have been known to produce symptoms similar to those of typhus fever, and after death, the blood is remarkably altered. It is nearly altogether fluid and is of a very dark colour and exudes from the mucous surfaces.

The following official letter from the Deputy Post Master Hoosingabad, to the Secretary of Customs and Post Office Committee, dated 17th May, 1837, points out the bad effects of corrupted water on the human constitution.

"For the benefit of the Police Chokees and travellers, I had wells made at all the stages to Baitool which precaution has quite put a stop to jungle fever which used to be contracted by the Najeems, dawkmen, travellers, and people who resided there."

In a native regimental hospital, for the most part, the different diseases are so few, and these vary so little in their forms, that a single description which shall embrace the usual typical characters of any particular disease, will generally be applicable to all the cases in which that disease occurs.

I have found this to be so much the case, that in my annual reports, I have experienced great difficulty in avoiding repetition, and for want of more original matter, have been obliged from time to time to confine myself to a mere reference to my former views and treatment, according as opportunities have enabled me to test their accuracy and success.

Article VI.

Observations on the Dracunculus as it prevailed in the 22d Regiment, N. I. from April till September, 1841. By D. Grierson, Esq. M. D.

Presented by the Medical Board, September, 1841.

The first case of dracunculus, the only one for that month, was admitted in February. The admissions for the successive months were as follows. March 27; April 184; May 79; June 34; July 13; and August 5; while the discharges were March 3; April 29; May 49; June 42; July 64; and August 87. One man died and 68; remain in hospital.

The number of cases treated including a few re-admissions (the exact number is 16, has been 343. The number of worms extracted has been 709, averaging two and a small fraction to each man. Of the whole number treated there have been, having worms on the body 5; upper extremities 29; lower extremities 335. No case of worm on the head has been observed.

The cases may again, with respect to the worms, be divided into uni-numeral and multi-numeral. Of the former there have been 169, of the latter 174; of the former the distribution was as follows: — body 2; upper extremity 5; lower ditto 162. The multi-numerals consisted with few exceptions (the exact number is six) of a plurality of worms on the lower extremities.

Frequently three, four or five worms, more rarely six, have coexisted or succeeded each other in the same individual. Two cases, one of eight, the other of ten, which is the highest, have occurred.

The complaint has presented its usual characters. Often general excitement with extreme pruritus and a universal erythema, or eruption somewhat resembling the wheals of urticaria, has proved a premonitory symptom. A sudden puffy swelling with little pain has often served the same purpose, sometimes unusual itching has led to the discovery of the worm lying cord-like in the subcutaneous cellular membrane. Most frequently the appearance of a bulla attended with itching, or not, has given intimation of the disease.

In the first case a brisk purgative has relieved the distressing feeling; the eruption disappears; and in two or three days the bulla will indicate the seat of the animal. In the second case the purgative is also needed, and lead lotion has been used with advantage. In any case when the bulla appears, the practice I have followed is to remove the elevated cuticle; then to clear away any inspissated mucus that may adhere to the base. In doing this, it often happens that a little diaphanous bag containing limpid fluid is seen, and if this be pulled upon, it will be found to be the end of a small hair-like tube which may be taken out to the length of many inches. I notice this, because it has doubtless given rise to the idea that worms exist of the size of a horse hair, — which is erroneous.

The next thing I have done, is to clip away, without attempting its extraction which is injurious, close by the surface, this inner organ or apparatus of the animal, and when the part is dried, rub it well with lunar caustic. The part being left exposed, a hard dry covering is afforded, which after a few days, when the new cuticle has formed under it, has been detached; with this advantage, all previous irritation is removed, and instead of a large tender surface continually liable to suffer from contact with the worm, the orifice alone by which the worm is to be extracted remains.

In detaching the dry slough formed by the caustic, it usually happens that the end of the worm has adhered, or if not, a little blackened point indicates the desired object. The worm being seized with fine forceps, light traction applied in various directions till the axis of the worm is discovered, has been used. So long as the worm yields, this has been continued, but when resistance is made, — suspended, — to be renewed again after twenty-four hours; and I should prefer no way of disposing of the part extracted, to that, of coiling the worm on itself and covering it with a piece of oiled-silk; but in the absence of this useful material it has been wound on a flock of cotton (care being taken to renew it frequently) and covered with some succulent leaf.

Many a worm has thus been got rid of with very little inconvenience. But in many, perhaps in most cases, by carelessness, by accident, or despite of every prudence and caution, the worm will break. In such cases the caustic has been freely applied to the orifice, and I believe the dilation by the scalpel of the orifice to admit of free application of the caustic, would be an improvement on this practice. The end of the worm may again protrude by the orifice (rendered more probable by dilation) which is most desirable; or diffuse inflammation of the limb with effusion of serum, or blood, causing great swelling may ensue. In this case I have been slow to practice the

free crucial incisions recommended by some. Active purgation and cold lotion will in most cases answer every indication. Cases where the constitution may be seriously involved, or joints may threaten to be injuriously affected, would of course justify more active, provided they be more certain, means of relief; but it is to be borne in mind, that the inflammation is not strictly phlegmonous, but more of that description following the bite or sting of venomous insects or reptiles, where the tendency is so much more to effusion than suppuration.

A third event may follow the disappearance of the broken end of the worm. The irritation may produce true phlegmonous inflammation, leading to the formation of laudable pus without much affection of the limb generally, or this effect may take place after the diffuse swelling, already alluded to, has gone off. And here the acknowledged and good principle of surgery as to the early opening of abscesses has been departed from. The abscess is the result of the effort of nature to expel the offending foreign body, and early interference with it may defeat this object. But, let the abscess be well matured, and the probability is the worm will be detached, in part or in whole, so that, an opening being made, it may at once escape or be soon after extracted. The pain of abscesses, which involving as they often do parts which when inflamed are exceedingly painful, has been moderated by leeches, poultices and anodynes.

It sometimes happens that inflammation follows the entire extraction of the worm; and the ulcers succeeding the extraction of the worm, whether formed by abscesses or otherwise, often remain very long and resist a great variety of treatment. In such cases constitutional treatment sometimes effects a rapid improvement.

Such have been my views and the practice they have led to, during this tedious time of harassment and suffering, and I know not that I could do better than adhere to them on any similar future occasion.

I have cut down upon and extracted the worm in whole or in part, but for various reasons, I would neither follow this practice nor recommend it to others. I regard attempts to get rid of the worm quickly by medicines, whether internal or local, with no more favour than such attempts would merit, were they directed to the removal of any foreign substance whatever, lodged by whatever means in the body. Several pretenders to specifics were encouraged by being allowed to select their own time, treatment and patients, but their endeavours were futile.

I have nothing of any value to state on the obscure subjects of etiology and prophylaxis.

I have noticed one erroneous idea regarding the animal. The only other which I shall now mention concerns its length. I have seen nothing to countenance the assertion that the creature attains the length of twelve feet. To appearance, all I have seen, have been between one and a half and three feet, and of twenty preserved entire which I now have, the average length is twenty-three six-eighths inches ; the longest and shortest being respectively thirty-one and eighteen inches.

Article VII.

* *Notes sur la plaie du Yemen, offrant l'analyse d'une monographie de cette Maladie.* Par M. Le Lieutenant Colonel Dr. Chedufay, Medecin Inspecteur des armées d'Arabie.

† Presented December, 1840.

I. Parmi les maladies qui attaquent les habitans du littoral de la mer rouge il en est une qui semble ne pouvoir exister solitaire, mais bien aggraver une premiere maladie, lorsque celle ci offre toutes les conditions voulues pour la recevoir.

II. Cette maladie consécutive à une maladie primitive est la plaie

* A Messieurs les Membres de l'Academie de Medecine de Bombay.

Messieurs, — J'ai l'honneur de vous adresser par le bienveillant intermediare de M. le Dr. Bloxham un memoire intitulé "Notes sur la plaie du Yemen," offrant l'analyse d'une monographie de cette maladie.

L'anatomie pathologique et la therapeutique de la plaie du Yemen, sont encore si peu connues, qu'il ma paru que vous pourriez accueillir, avec quelque intérêt des renseignmens, propres à conduire a l'appreciation des symptoms des lésions, et du traitement de cette cruelle maladie.

Mon but aura été atteint, si en effet, ces resultats peuvent servir de base à des recherches ulterieurs, plus heureuses, et plus completes

J'ai l'honneur de vous,
saluer Messieurs avec
consideration votre Serviteur
Dr. Chedufay.

Gedda, ce 11, Aout, 1840.

† *Note by the Secretary.* — This paper was presented to the Society by C. R. O. Bloxham, Esquire, Assistant Surgeon, Bombay Establishment, who after having seen the intractable nature of this disease at Aden, proceeded on duty in the H. C. Brig Euphrates to Jedda where in an hospital established by H. H. the Pacha of Egypt under the charge of M le Dr. Chedufay, Dr. Bloxham had an opportunity, during a period of three months, of observing the treatment pursued in that Institution. Dr. Bloxham struck with the success of the treatment, requested M. le Dr. Chedufay to favor him with a copy of the report made by him to the Institute of Medicine in Paris — with this request, M. le Dr. Chedufay obligingly complied, and at the same time presented two well executed drawings, of the ulcer in different stages. It is with regret that the Committee have found themselves unable to publish these drawings.

du Yemen nommée par les habitans du pays Guiarh Yémény ; jài conservé cette dénomination.

III. Propositions sur la maladie connue sous le nom de plaie du Yemen.

1. La plaie du Yemen n'est pas connue ; on la crue jusqu'ici une maladie toute locale ; elle tient toujours à un vice général, dont cette plaie n'est qu'un symptome, et qui revêt les formes adynamiques.

2. Sous le rapport de la frequence, on remarque que cette affection se présente dans l'ordre suivant.

1. Chez les Negres venant du Sennâr ou des contreés voisines, comme le Kordofan, le Darfour, &c. 2°. Chez les indigénes de la classe misérable, et les Indiens malheureux. 3°. Chez les soldats, de Syrie nouvellement arrivés et soumis à de grandes fatigues, ou qui ont souffert des maladies du pays, et des intemperies d'un climat chaud, si different du leur. 4°. Chez les Egyptiens transportés dans l'Arabie ; chex eux elle est rare, et a besoin, pour se développer, qu'une des causes générales qui précédent son développement soi beaucoup plus prononcée que chez les individus des trois autres catégories. 5°. Les Officiers Turcs, en assez grand nombre dans les regimens, n'ont presenté que cinq a six cas dans l'espace de sept ans. 6°. Les Turcs attachés à la cavalerie, ou aux regimens irréguliers ont succombé en assez grand nombre à la suite de cette plaie, mais toujours il y'avoit, en avant, une maladie primitive, et tous appartenaient à la classe malheureuse, ainsi que quelques marins Indiens de la marine de la compagnie et marchands. 7°. Les Europeans n'en'ont jamais été atteints quelles que soient les écorchures, les plaies, ou autres solutions de continuité de la peau des extremités inférieures.

IV. La plaie n'est ni épidémique, ni contagieuse ; ce dernier fait resulte de l'expérience directe d'inoculation que jái faite sur plusieurs individus.

V. La plaie ne se rencontre que depuis Yambo à environ 24° de Lat. N. jusqu' Aden un peu moins de 13° L. N ; elle est de plus en plus commune selon qu'on s'approche du littoral, plus encore dans les iles ; ne se remarque que rarement dans l'interieur et toujours dans ce cas, elle est bénigne ; cependant, au bas des montagnes du Hedjaz ou nos troupes campaient, elle a fait beaucoup de ravages l'année dernière ; cette année, vu de certaines circonstances atmospheriques, elle a parue pour la premiére fois sur les montagnes du haut Hedjaz ou elle etait inconnue.

VI. Le siege le plus commun de cette plaie est à Confouda pays trés bas, et au dessous du niveau de la mer ; à Moka et dans l'ile de Kamran voisine de ces pays.

VII. Presque constamment, la plaie se montre aux extremités inferieures, depuis le genou jusqu'au bout des orteils, particuliérement sur le coté interne du membre et le dos du pied.

VIII. Elle est toujours liée, comme nous l'avons dit plus haut, à un vice général de l'economie ; car ce n'est que dans des cas exceptionnels qu'il n'en existe aucune trace. Ces vices généraux, sans lesquels la plaie ne fait que très peu de ravages, et qui, d'après cela, semble être la cause essentielle de la maladie, sont d'apres leurs ordres de fréquence. 1°. La diathèse scorbutique arrivée à un dégré tél, que par des symptomes extérieurs, et souvent mèmes tres marqués il est impossible de la méconnoitre ; en général la plaie offre les caractères des plaies dites scorbutiques. 2°. L'adynamie suite d'une maladie chronique, ou d'une aigue prolongée au dela du 15me ou 25me jour ; période qui suffit dans cette contrée pour qu'il existe une adynamie très profonde, pendant laquelle se montre fréquemment l'œdematie des membres inferieurs, à laquelle il faut reconnaitre une grande influence pour le developpement de la plaie. 3°. La nostalgie, les chagrins, les privations, la mauvaise nourriture, les fatigues jointes au changement de climat, toutes causes de nature adynamique, sont autant de causes prédisposantes, qui n'attendent plus que la cause occasionelle.

IX. Cette cause occasionelle est toujours une égratigneure, ou une écorchure resultat de la chaussure, du prurit, d'un choc, &c. il se montre d'abord un petit bouton qui une fois écorché donne rapidement naissance à la plaie ; elle est produite trés souvent par la piqûre d'un petit insecte qui vit sur le chameau, cette derniere determine un fort prurit, la piqûre s'engorge et la plaie paroit.

X. Celle ci une fois déclarée, et la maladie n'etant pas encore parvenue à cette époque ou l'adynamie est à son dernier periode, le changement de lieu en s'eloignant du littoral, est un des meilleurs moyens de la modifier favorablement.

XI. Sous le rapport du diagnostic, dans le cas ou les causes générales existent (sans lesquelles la maladie est benigne) ou peut noter les trois dégrés suivants. 1° dègré : la petite plaie résultant du bouton, ou de l'écorchure produite par la chaussure, loin de se cicatriser, présente au bout de deux ou trois jours, de l'inflammation à son pourtour, avec gonflement, tandis qu'au centre on remàrque une petite escarre ; aprés deux ou trois jours il se forme un second cercle inflammatoire, tandis, que le premier passe à l'état gangreneux ; la premiere escarre etant tombée laisse à sa place une dépréssion par perte de substance, qui augmente rapidement jusqu'a acquerir la grandeur d'une piéce de cinq francs. Jusqu'à la, la peau seule et le tissu

cellulaire sous-cutané ont été attaqués ; arrivée à cet état la plaie se nettoie, sa surface est rougeâtre, ses bords relevés et renversés en dehors ; il existe des douleurs limitées aux environs de la plaie : tel est le premier degré de la maladie.

2°. degrée En cinq ou six jours la plaie s'agrandit avec rapidité, au point d'egaler la surface palmaire ; pendant ce temps elle ne borne plus son action à la partie dermoide elle s'étend aussi en profondeur, attaque les muscles et les tendons ; elle n'est plus uniforme, elle creuse inégalement, presente des pilliers des colonnes charnues, entre les quelles on remarque, des points gangreneux ou grisâtres qui forment des nouvelles escarres ; les bords continuent à se renverser endehors, deviennent de plus en plus relévés, de plus en plus douloureux ; autour on remarque un cercle grisâtre, qui se trouve bientôt envahi et confondu dans les nouveaux progrès de l'ulcére. Souvent dans dix à douze heures le fongus recouvre les trois quarts de la plaie, et aprés avoir disparu, reparoit de nouveau au bout de dix à quinze jours. Cet accident, qui arrive assez souvent, retarde la guerison surtout lors quél revient à plusieurs reprises sur le même individu. Il n'est pas rare alors de voir, la plaie se cicatriser malgré la destruction des muscles et des tendons ; mais au moment ou la cicatrice semble complette et durable, à la suite d'un changement dans la direction des vents, ou de toute autre cause externe ou interne cette large cicatrice se parsème de points enfoncés gangreneux qui rongent cette derniére, et se rapprochent. Dans deux ou trois jours la plaie est dans son état primitif ; souvent dans, 24 heures, la partie cicatrisée tombe en lambeaux comme on l'observe dans les parties putrifieés. Dans ce degré les douleurs insupportables ne sont plus bornés au pourtour de la plaie, mais elles s'etendent le long des muscles, des tendons, des os, et s'opposent par leur continuité au moindre repos. Dans ce degré quoique l'os ne soit pas encore à découvert, il est déja malade ; en effet, si l'on vient à le mettre à nu, soit en pressant sur le tissu ramolli qui le recouvre soit en faisant une petite incision, on trouve le perioste detruit et l'os atteint de carie. Souvent l'os necrosé se détache et suit lui meme les progrés de la guerison ; dans ce degré l'homme reste prèsque toujours estropié.

3°- degré ; la plaie continue de s'agrandir ; sa surface et sa profondeur finit par mettre à nu les articulations et les os ; alors, de l'état de carie, l'os passe à celui de nécrose. Si le malade resiste encore aux progrés toujours croissants de la maladie, les parties necrosées, s'exfolient, et au pied par exemple, les phalanges se detachent, ainsi que les os du metatarse ; la plaie pendant, tout ce

temps, en totalité ou en partie, est recouverte d'escarres gangreneuses humides ou séches.

XII. Au premier degré l'ecoulement qui a lieu par la plaie, est une suppuration sanguinolente, qui en séjournant sur les bords, determine sur les points avec lesquels elle est en contact, une inflammation manifeste ; elle tache le linge d'une maniére indélébile, mais sans le detruire ; mais dans les deux autres il y a en outre destruction du tissu ; la plaie bien essuyée conserve un aspect blanchâtre ; dans le cas de guerison, la suppuration reprend les caractéres ordinaires des plaies qui se cicatrisent dans le 2me. degré, la suppuration sanguinolente fait place à une suppuration grisâtre, et de plus à une sérosite très abondante; les points gangreneux donnent la suppuration, dont les caractéres et l'odeur sont connus. Dans le 3me. degré il y a toujours gangréne et nécrose ; la suppuration est celle de ces deux états avec la suppuration du premier degré, qui même existe seule et en petite quantité dans le cas de gangréne séche ; dans les trois cas l'odeur de la matière qui s'en ecoule, outre celle particuliere à la gangréne, a quelque chose qui la rend repous sante.

XIII. Dans tous les cas, et à tous les degrés à moins de diarrhée colliquative ou de dyssenterie le pouls est toujours normal, l'appetit très develloppé, les digestions parfaites, la peau seche sans sueur, et decolorée, malgré les douleurs atroces et l'insomnie du malade.

XIV. La marche de la maladie est caractérisée par le passage successif d'un degré á un autre. La durée de chacun d'eux varie suivant l'intensite de la maladie prédisposante dont nous avons parlé, ou de la disposition plus ou moins forte á la contracter des divers sujets indiqués plus haut (no. III). ainsi une plaie peut ne mettre que quinze jours pour arriver au troisième degré, ou au contraire mettre plusieurs années.

XV. La durée est très variable, et quelque soit la terminaison, soit par la guérison, soit par la mort, celle ci peut, d'après les memes motifs que nous venons d'énoncer pour la marche, etre plus ou moins eloignée du point d'origine.

XVI. La plaie du Yémén peut exister seule, á un seul membre, etre multiplieé, ou même attáquer les deux membres á la fois.

XVII. Le pronostic varie également selon la classe atteinte (voir les propositions), la gravité de la maladie prédisposante, le degré de l'affection locale, le temps ecoulé depuis l'invasion. Cependant on peut dire que dans le 3me. degré, la guerison quoique possible est très rare, et laisse toujours les personnes estropiées par suite de la destruction des muscles, des tendons et de portions d'os ; que dans

le 2me. degré la majeure partie guerissent en conservant d'enormes cicatrices, qui génent plus on moins le mouvement des membres; que dans le 1re. degré la plaie très limitée ne laisse aucune infirmité.

XVIII. La récidive est assez fréquente quelques jours apres la cicatrisation complette; mais la fréquence varie en raison directe du degré plus avancé, auquel etait parvenue la maladie; elle n'arrive guère que dans le 2me. ou 3me. degré et peut se montrer huit à dix fois de suite; quand elle a lieu dans le 1re. degré, la plaie revient rarement sur le poínt cicatrisé.

XIX. Sous le rapport de sa nature, la maladie connue sous le nom de plaie du Yémén n'est donc le plus souvent qu'un symptôme d'une maladie générale, comme nous l'avons indiqué dans l'article des causes; ce n'est pas donc, comme on l'avoit cru, une maladie toute locale, mais ce n'est pas non plus le symptôme d'une seule diathése générale, comme les plaies scrophuleuses, vénériennes, qui toutes ont pour cause assignée la diathese du meme nom; ici au contraire la cause générale varie, et a le plus souvent besoin du concours d'une cause occasionelle, quoique celle ci puisse manquer; cependant la cause prédisposante est toujours de nature adynamique.

XX. Le traitement convenable de cette maladie découle nécessairement de la conclusion que nous venons de tirer de la nature de la maladie; il ne devra pas étre seulement local mais bien général, et celúi ci devra être essentiellementt tonique, la plaie considereé comme symptôme exigeant seulement le traitement de tout ulcére ataxique avec, ou sans gangréne. Jusqu'á ce dernier temps, lorsque l'on considerait la maladie comme toute locale, les traitemens locaux mèmes toniques, mais non combinés avec le traitement tonique général, ont en partie échoués; tels ont étés les caustiques, les cautéres actuels, employés pour faire disparoitre les points gangréneux, le sulfate de cuivre, les solutions de chaux, les chlorures de chaux, le quinquine, &c. tous cés moyens, le plus souvent ne faisaient qu' aggraver la maladie et les douleurs. Le contact de l'air est toujours funeste; de la, l'habitude des indígènes, lorsquíls ne peuvent guerir, de la recouvrir avec des plaques métalliques, et de ne la panser que tous les deux ou trois jours.

Pour résumer tout ce qui a rapport au traitement, nous dirons qu'il faut employer un traitement général qui sera celui du scorbut, de l'adynamie et en ayant recours aux toniques usités dans les pays chauds. Surtout au moyen d'une bonne nourriture, de changer de lieu le malade en s'éloignant des bords de la mer.

Enfin dans le 3me. degré; si cette maladie se termine par la

mort, quatre on cinq jours avant, on voit la surface de la plaie complettement mortifieé; les tissus se décomposent et tombent par petits morceaux; la diarrhée colliquative si elle n'existait déja, vient aggraver l'etat du malade, qui succombe accablé par les douleurs les plus atroces. Dans le cas contraire; lorsqu'on se sera décidé à pratiquer l'amputation du membre malade, lorsque toute fois, au moyen du traitement general, on a mis le malade dans de bonnes conditions, et qu'aucune contre-indication ne s'y oppose, on a trouvé que le nombre des succés a été superieur à celui des revers; ainsi sur neufs cas recents il n'y a eu qu'un cas de mort survenu au 40me. jour, aprés l'operation, et par suite de la dyssenterie. On peut quelque fois, lorsque le sujet est jeune, tenter l'operation malgré que toutes les conditions requises, n'existent pas. J'ai observe assez souvent que l'amputation faisait cesser sur le champ la diarrheé colliquative et tout symptôme mortel. Enfin il faut observer que dans l'amputation la réunion par première intention est généralement adoptée et suivie de succés.

Ce qui prouve la forme adynamique que le climat imprime à toutes les maladies, est la necessité ou l'on se trouve de nourrir le malade à partir du jour même de l'operation; car la diète entrâineroit le plus souvent la mort; ce qui vient à l'appui de ce fait est l'absence ou (quand elle se montre) le peu d'intensité de la fievre traumatique.

La ligature des arteres tombe ordinairement du 3me. ou 5me. jour, et par la simplification du procedé operatoire usitè dans les amputations circulaires, la cicatrice du moignon est terminée du 8me. au 12me. jour, si toute fois quelque cause malheureuse ne vient en arrêter la marche; ce dernier cas est fort rare et le malade recouvre en peu de temps son embonpoint primitif.

Article VIII.

Report on the Medical Statistics of Quetta.

By A. H. Leith, Esq.

Presented by the Medical Board, November, 1841.

The part of Khorasan in which the subject of this report is situated, is a succession of valleys between high ranges of mountain limestone, which run nearly N.N.E. and S.S.W. the strata of the rock dipping generally to the W.N.W. These ranges sometimes have intervals of considerable extent, where the coalescing valleys form plains; in this manner is formed the Dusht-i-bedauleh upon which we emerge from the top of the Bolan Pass. After crossing the northern end of this plain into which the abrupt ends of two or three ranges of rocky mountains and their intervening valleys jut, we enter the farthest valley which is called Shal. This valley follows a N.N.E. direction for twelve or fourteen miles, and then forming an angle, turns to the westward through an interval in the next range, which only partially separates it from the Pisheen valley.

The valley of Shal varies in breadth from four to six or seven miles: at its angular part it is much wider. In the bottom of the valley the ground slopes from each side, the declivity from the eastward and northward being the gentler and more extended, that from the westward and southward the greater, and terminating sooner in the line along which the stream that arises at Sirial runs. At the angular part especially is the slope extended and where it terminates Shalkote or Quetta is situated — this is a small mud built walled town with a wet ditch and a central conical mound, on which are some ruinous buildings, formerly the citadal.

Quetta is in N. Latitude 30° 8′ and its Longitude is said to be 66° 53′ E. Its elevation above the level of the sea is about 5250 feet. Thus situated it has an atmosphere diminished one-sixth in density, which together with its position so near the Tropic gives it a great annual range of temperature.

The seasons are divided by the inhabitants into five, viz. *Zumustan* or winter, of nearly five lunar months duration, commencing about the

beginning of November : it is subdivided into three portions of about forty days each, these are called *Taruchilu*, *Speena Chilu* (during which snow lies on the ground) and *Suru Chilu*. Then comes *Surlé* or spring, it begins about the middle of March and continues about three lunar months. It was in this season, that the portion of the force to which I am attached arrived in the valley ; the trees were then clothed with their new foliage, the fields were green and the ground was beautifully studded with wild flowers, identical or congeners with English species : snow still continued to fall on the higher parts of the mountains when it rained in the valley, and it was not until the beginning of May that the last traces disappeared from the higher summits of Chiltun, Huzar Gunjee and Tukatoo. So uncertain is the climate, that snow has been known to fall in the valley during the barley harvest, which takes place in June. This year (which was unusually hot) in July, snow was still found in the crevices of the rocks and brought into our camp for sale. *Ahar*, the next season begins with the first ripe Shah-toot (mulberries) about the commencement of June and lasts about forty days the weather is hot but not oppressive ; the heat increases rapidly. In *Ahar* apricots are ripe and the barley and the wheat harvests take place. *Vussa* which is sometimes called Sawun follows, and is also of about forty days' duration. This year it has much resembled the hot season in the inland parts of India before the monsoon ; the heat has been sultry ; the herbage on the unirrigated ground was quickly burnt up. In this season we had cloudy and hazy weather with a few thunderstorms ; on two occasions rain fell, and a fall of rain is yearly expected in this season, and on it in a great measure depends the success of the juwaree crop. The fruits of this season are melons, grapes, plums and pears, cucumbers also are abundant. *Ahar* is considered rather unhealthy by the inhabitants, but much less so than the next season or *Spee Muné*, it is also of about forty days, beginning about the last week of August ; it is analogous to the European autumn : the weather becomes rapidly cooler and the atmosphere is clear and unclouded : the jawaree and maize harvests take place ; the leaves become yellow and fall ; apples, quinces and pomegranates, are ripe. *Wur Muné* follows, it is of one lunar month's duration ; it is considered healthy by the inhabitants ; in it they prepare their winter provisions, &c. It is common with the husbandmen to designate the seasons by the names of the grains and fruits that ripen in them.

On our first arrival, the wind blew chiefly from the northward of west, but since May, with few exceptions, it has blown during the day

strong from the westward, and often very violently, raising much dust: during the nights and mornings there has been a light easterly breeze or a calm; and during August and part of July, from sunset until about 10 P. M. there was generally a southerly wind which brought a thick haze down the valley.

The following is an abstract from the register of the thermometer at Quetta from the middle of April to the middle of September, with the exception of five weeks in June and July, during which the observations were made at Mustoong. As by comparison of the temperature at these two stations, I found it to be alike, I have incorporated the observations made at Mustoong with those made at Quetta.

April last 15 days		May.		June.		July.		August.		September first 13 days.	
Mean.	Mean daily range.	Mean.	Mean daily range.	Mean.	Mean daily range.	Mean.	Mean daily range.	Mean.	Mean daily range.	Mean.	Mean daily range.
60.	18.	68.4	29.	80.2	30.6	82.6	29.4	80.8	25.	62.5	26.7

N. B. — It was during the last fortnight in June and the first three weeks in July that the temperature was observed at Mustoong.

These observations were made in a single poled tent with double fly and single walls, similar to those of European soldiers. The difference between the temperature in such a tent and that in a house, both being open and allowing free access to the external air, I found to be in the mean daily maximum in July, less than 6° — the thermometers were in both, hung in free air: — it is frequently the case that the temperature of a house is underrated from the thermometer being hung against a wall.

The neighbouring hills vary much in height; at their highest parts they are estimated at two or three thousand feet; they are of mountain limestone abounding in organic remains, chiefly of cephalopodous mollusca. Masses of lucullite and stinkstone and some chert occur. At the N.E. angle of the valley near Hunna, where the stream that supplies our camp, enters from the neighbouring valley, red conglomerate lies over the limestone, and in that neighbourhood as well as at the corresponding S.W. angle, there is shale alternating with flaggy limestone. Talc occurs in the shale. — Selenite is also found. The bottom of the valley is of a light alluvial soil composed of clay and calcareous and silicious sands, and is mixed with from a fourth to a half or more of rolled pebbles of mountain limestone — that is, in parts not cleared for cultivation.

Cultivation being chiefly dependent on irrigation, is limited in extent and in situation by the supply of water, and the fields and villages are nearly confined to the lowest ground. The streams continue to flow throughout the year, but they are not numerous ; an artificial supply is obtained with great labor by Karez or underground channels, which at a depth of thirty, forty or more feet, convey the water from the bases of the hills. These karez are formed and kept in repair by means of wells along their course at intervals of from twenty to forty yards. Besides the grains already mentioned, lucerne is cultivated to a large extent ; the ground on which it is grown is kept continually wet, while, from the repeated cutting of the plant, the sun's rays are allowed to act on the soil. Madder is grown in considerable quantities, and in its cultivation the damp soil is much exposed to the sun's rays, and in the beginning of October in digging up the roots, the ground is turned up from a depth of two or three feet : at the same period the soil is all broken up for the reception of the wheat seed.

The health of the natives of a place is not a good criterion of its salubrity or the contrary for strangers, for the constitutions of the former have from birth been modified by the circumstances in which they live, yet from the manner in which they are affected we may form an opinion regarding the endemic influences, although not of the intensity with which they will act on the new comer. The chief maladies to which the inhabitants of Shal are subject, are bowel complaints and fevers, and the season of their prevalence are Vussa or the hot season, Sper muné or the autumn, especially the latter. The present year has been an unusually sickly one to the inhabitants, and fever has been very fatal among them, this is ascribed to the excessive heat which there has been. In the memory of man, it is said, so hot a season has not been known.

In forming an opinion regarding the salubrity or otherwise of this valley, from the state of health of the Troops stationed here during the last five months, care must be taken not to include among the cases of endemic disease those complaints which were contracted elsewhere.

The regular corps belonging to the Field Force, that have been stationed here, are the 1st and 4th Troops Horse Artillery, H. M. 40th Regiment a Company of Madras Sappers and Miners (Natives), a Wing of Native Cavalry and the 20th and 21st Regiments N. I. — of these the 1st Troop H. B., H. M. 40th Regiment and the 21st N. I. alone have remained, all the five months at Quetta. The 4th Troop H. B., the Sappers and Miners, the greater part of the Native Caval-

ry and the 20th N. I. were detached in May and June to Noshky, where much severe and lasting sickness was contracted in the forms of fevers and bowel complaints. The 20th N. I. moreover, had ascended the Bolan Pass in February and had in consequence been exposed to very inclement weather, from which they were but poorly sheltered in their routies and against which they were not defended by sufficient clothing. It must also be borne in mind, that the Troops had suffered more or less during the cold season in Kuchee from diarrhœa, a complaint which though at first mild — so mild as but seldom to bring the soldier to Hospital, — yet that has proved very obstinate in those who unfortunately brought it with them to Shal. Again it may be repeated that the present year has been one of extraordinarily high temperature, the effect of which would be to enhance the strength of those influences which will subsequently be mentioned, as the causes of disease as it occurred among us.

Table shewing the percentage of diseases and deaths among the corps stationed at Quetta, from the middle of April to the middle of September, 1841.

	April.	May.	June.	July.	Aug.	Sept. up to 13th.	Total Cases per cent	Deaths. per cent	Deaths. Total.
1st, Troop H. B.									
Bowel complaints . .	.92	3.70	3.70	5.61	3.70	3.70	21.33	..	..
Fevers	4.59	1.85	3.70	1.87	4.63	.93	17.57	..	..
Hepatic Affections . .	..	..	..	..	..	..	..	..	..
Other Diseases . . .	3.67	1.85	6.48	6.54	3.70	1.85	24.09	..	..
Total .	9.18	7.40	13.88	14.02	12.03	6.48	62.99	..	..
H. M. 40, Reg.									
Bowel complaints . .	3.15	4.21	5.19	7.67	10.50	2.90	33.62	2.01	17
Fevers	5.60	5.03	15.46	17.59	21.48	10.64	75.80	1.54	13
Hepatic affections . .	.23	..	.71	1.77	.72	..	2.43	.12	1
Other Diseases	3.27	3.41	5.64	4.84	3.93	1.33	22.42	.35	3
Total . .	12.25	12.65	27.00	31.87	36.63	14.87	134.27	4.02	34
21, Reg. N. I.									
Bowel complaints. . .	3.39	1.95	1.89	1.32	1.88	.94	11.37	.09	1
Fevers	1.74	2.54	3.12	3.77	8.67	13.96	33.80	.19	2
Hepatic Affections . .	..	..	..	..	..	..	..	..	..
Other Diseases . . .	3.58	2.34	3.40	3.58	2.17	.94	61.01	.19	2
Total . .	8.71	6.83	8.41	8.67	12.72	15.84	16.18	.47	5

Bowel complaints and fevers form the bulk of the diseases. In examining how far they are referable to local causes and peculiarity of climate, I begin with bowel complaint. It has before been mentioned that a great number of the Troops were more or less affected

with diarrhœa in Kuchee, and carried with them to Shal the disease or a strong tendency to relapse into it. Before we left Kuchee the weather had become warm, the mean daily temperature taking the last week, being 79° Fahr.; there was consequently a great change experienced on ascending to a mean daily temperature of 60° which we found it to be at Quetta, with a strong piercing wind blowing. This change is sufficient to account for the numerous admissions for bowel complaints which then took place among the Natives of India. We were now in an atmosphere in which from its diminished density and dryness, a more rapid evaporation from the surface took place than our bodies had been accustomed to, and when the heat increased, which it soon did in a rapid ratio, and the usual changes of the blood in the lungs were retarded, the skin came to perform a very active part as an excretory organ, and relieved the liver of part of its proper work as well as of the part of the lungs office of depurating the blood, which during their inactivity, would have been performed through an increased secretion of bile, in a dense and moist atmosphere with a temperature similar to what existed here. From the liver thus becoming less active, the bowels lost their ordinary stimulus and became deranged: the bile which evidently ceased to be eliminated through them in sufficient quantity became the cause of jaundice, another not infrequent disease which however showed itself in a mild form. This state of the bowels was, if neglected, often followed by an acute attack of dysentery or it ended in chronic dysentery with ulcerated bowels and sometimes abscess of the liver. What added much to the evil, was the inferior quality of the food furnished to the Troops; the butcher meat was often bad, and for sometime the bread was of a quality ill adapted for men who had a proclivity to this form of disease. An unvaried item in the Natives rations was Dhal, than which scarcely any food is more hurtful to them when thus afflicted. There was an almost total want of culinary vegetables; and an inferior sort of fruit, the produce of the orchards surrounding the neighbouring villages, was greedily eaten and frequently in an unripe state. Latterly there has been a sudden reduction of temperature with a continued dry state of the atmosphere and with increase in the body of positive electricity: in connection with these changes some cases of acute dysentery have presented themselves. Unless it be supposed that morbific exhalations of two distinct natures rise from it, the soil of the valley cannot be considered as the cause of the bowel complaints, for in the locality where deleterious miasmata show themselves to be in fullest operation by the inordinate num-

ber of fever cases that occur, there is not found a more than ordinary proportion suffering from affections of the bowels.

The above are the apparent causes of this complaint as it came under my observation, — they may be again enumerated, 1st Sudden change from a warm to a cold climate ; 2nd, The change to a rarer atmosphere ; 3rd, The rapid rise of temperature in the hot month; 4th, Inferior food and indulgence in bad fruit ; 5th, Change from hot to colder weather, with alteration in the quantity of idio-electricity. The first of these causes might be avoided by a little delay in the ascent of Troops from Kuchee in the spring months ; in the hot months it would not exist, and those coming from northern stations would not be affected by it. The hurtful nature of the second appears to depend on its connection with the third cause, it would be less powerful in the subsequent year than on the first arrival. The third cause, the rapid increase of temperature would be a permanent source of disease, and it appears to be a fruitful one among the inhabitants of the country. The fourth cause would cease to exist, were Troops permanently cantoned here ; a plentiful supply of vegetables might easily be grown, as the soil and climate are particularly favorable to the cultivation of most English vegetables. The fifth cause would be permanent — it is one which operates similarly in other countries and is yearly seen in considerable activity in the Dukhun, a careful adaptation of the clothing to the state of the weather is the best preventive.

Fevers on our first arrival from the warm climate below the Pass, while it was still cold here, were frequently of a congestive nature, the head or the lungs being the seat of the complication. When the hot weather set in, congestion of the brain again became a common accompaniment of fever, and most frequently in those who had been exposed to the sun or who had lived too freely. In the end of August and in September, remittents and intermittent became epidemic. The fever which has occurred toward the end of the hot weather and beginning of autumn, appears to be occasioned by miasmata. This opinion is strongly supported by the facts that it became prevalent when vegetation began to cease and the cultivated ground became exposed to the sun's rays, and that those situations which à priori would have been expected to abound most in malaria, are in reality the spots where this fever is most prevalent.

In explanation, I must first shortly describe the topography of Quetta. The town, as before stated, is at the bottom and nearly in the middle of the valley, and is on a highly irrigated level spot; this low part of the valley is fully under cultivation, with the exception of a piece of

meadow land, which from the abundant moisture, is always green. The commissariat stores are a little to the eastward of the town; and the residence of the Political Agent, the ordnance stores and the Lines preparing for the 20th N. I. are about three or four furlongs to the south-eastward on the same level, and surrounded with fields and watercourses. Lately H. M. 40th Regiment have been encamped on the low ground to the westward of the town. The HeadQuar ter's camp is about one and a quarter mile to the northward of the town upon the gentle slope which descends from the N.E. angle of the valley, and on ground which has never been under cultivation. The camp faces nearly S. W. on its right flank at a distance of about half a mile there is a low narrow line of cultivation and two or three villages. The wind has almost, without intermission during the day, blown strongly from the westward, and to its influence the Head Quarter or upper camp has been fully exposed, and I think this strong ventilation at this season is salutary, especially as the wind appears to pass over scarcely any irrigated ground on its way. The neighbourhood of the Political Agency, or what is called the lower camp, is from its low and sheltered situation in a great measure deprived of this ventilation. On the other hand, in August a light southerly breeze in the evenings brought a fog down the valley which came upon the lower camp, but in a much less degree, affected the upper; and this month the evenings and nights have been cold and generally calm, thus favoring the condensation over the lower ground of the noxious exhalations which the still powerful sun may have raised during the day; or there has been a gentle easterly air wafting these condensed malaria in the direction of the camp of H. M. 40th Regiment.

The adventitious circumstance of numbers of putrid carcases of camels and other animals being strewed about the lower camp, must add to its present insalubrity. That the lower camp is at this season particularly unhealthy is shown by the fact, that scarcely a Native of India or a European residing the reduring the last two months, has escaped an attack of fever; and a continued exposure to the pernicious air is frequently followed by enlargement of the spleen. But to particularize — the number of fever cases admitted into the Hospital of the 20th N. I. during the last eighteen days, has been 190; of these the detachment at the Political Agency of an average strength during that period of 92 has furnished 87 cases or 94.5 per cent of its strength, while the admissions from the portion of the Regiment in the upper camp has been 103 or only 14.7 per cent of its strength. Out of 200 Irregular Horse of the Upper Sind

Political Agency, at one time there were but 65 fit for duty, the rest being nearly all laid up with fever. The deaths from fever among this body of Irregular Horse have been numerous, whereas the sick of the detachment of the 20th N. I. from being removed for treatment to the Regimental Hospital in the upper camp, suffered comparatively little; no instance of the fatal termination of fever having occurred among them since July. The great number of fever cases in the 21st N. I. which is encamped in the upper camp, may be accounted for by its furnishing its proportion of guards and night piquets to the Town and to the Commissariat stores.

The number of fever cases among the Troops here, has hitherto been on the increase, especially among the European soldiery, and it is likely to continue great, until the very cold weather sets in.

The fever complicated with local congestion of which a few cases occurred at the time this force first arrived, is to be expected in greater proportion during the winter months, and then also inflammations of the lungs and other important viscera are likely to be of frequent occurrence. A sufficiency of warm clothing and good quarters are the prophylactic means which naturally suggest themselves; regular exercise ought to be a attended to. The fever of the hottest months might be in a great measure prevented by providing good barracks and restraining the men as much as possible, as is done in India, from exposing themselves to the sun's rays. Wet tatties of juwasee, which grows here abundantly, might be used. It would be useful to have white covers to the caps worn by the European soldiers when off duty as well as on duty. The importance of having the head protected by a colour which will absorb fewest of the sun's rays, will be seen when it is stated, that at Mustoong which differs but twenty-five miles in latitude from Quetta, in the middle of July, the actinometer indicated the intensity of the sun's rays to be 189½° Fahr. Water at that station boiled at 203° Fahr. thus the heat produced by solar radiation was but 13½° below the boiling point.

The only effectual means of escaping the pernicious influence of the miasmata, is to avoid the localities where they are in fullest operation, and I know not of a spot near Quetta where greater immunity is to be expected than the slope on which we are now encamped, and about a half or three quarters of a mile to the eastward of our present ground, that is, nearly on the site of our first camp; there we should have the advantage of rather higher ground and be at a greater distance from the low cultivated belt which is on our right flank. On the other hand, there is scarcely a worse spot at this season than that occupied by the Political Agency, the ordnance

stores and the lines which are being prepared for the 20th N. I. When the intense cold of winter shall have checked the production of malaria, this last mentioned situation of course will be less objectionable, and it has the advantage of being more sheltered than many others from the winter winds: but until then, at any rate, it ought to be avoided. The ground on which the upper camp is pitched although at present probably too exposed for the winter months, might be sufficiently sheltered by hedges and walls.

It has been already mentioned that the present has been a year, of very unusual heat, and as far as the inhabitants of the valley are concerned, it has been one of more than common sickness, hence it is a legitimate inference that our Treops have suffered more than they would have done in other years; useful information on this subject might be obtained from the Hospital Records of such corps of the other Presidency, as may have been stationed here before the arrival of the Bombay Troops. The moral circumstances in which the Troops have been placed have been unfavorable, they have had the tedium and irksomeness of a long halt without amusements or anything to interest them particularly, and without any definite object in prospect.

After making allowance for the unusual heat of this year and the unfavorable circumstances, both physical and moral, to which the Troops have been exposed; and on the other hand taking into account the comparative absence of the means of drunkenness, that fruitful source of disease in permanant cantonments, there will, I fear, enough remain to warrant the conclusion that this is far from being a healthy place.

With regard to the eligibility of *Siriab* for a cantonment, I should expect it to be more unhealthy than our present situation: it is in a more confined part of the valley, and during July and August, a haze fills that part while the site of our camp remains comparatively clear. The water too, I should expect to be injurious from large admixture of saline matter: this I have not ascertained to be the case by analysis, but I observed the banks of the stream to be much incrusted with a salt.

Mastoong, which is situated S.S.W. of Quetta, in N. Lat. 29°43′ nearly, in another valley, has a climate, at least, during the hot months, very similar to that of Shal; the winds are the same and soil is the same but less stony. The ground on which the camp is pitched (to the eastward of the town at a little fort called Khoodawut) is high and intersected with deep nullahs, it is close on the east side of a continuous line of orchards which is several miles in length. The

valley appears to be more productive than Shal, and the inhabitants consider it more healthy. During the fews weeks that I was employed on duty at Mustoong, I met with the same shades of disease as at Quetta. There, also, there occurred some cases of fever and many of bowel complaints, that had their origin at Noshkee whither a detachment of H. M. 41st Regiment was sent along with the detachment from Quetta. The Company of European Foot Artillery at Mustoong, like the Troops of Horse Artillery at Quetta, has been more healthy than it would in all probability have been in India, where an unlimited quantity of ardent spirits could have been obtained by the soldiers. In comparing the state of health of the Artillery with the other European Troops, I cannot hazard an opinion as to the cause of their greater immunity from sickness hitherto, further than that in the case of H. M. 40th Regiment nearly the worst ground in the valley was latterly occupied by it.

Both at Quetta and at Mustoong convalescence from severe sickness is very slow during the hot weather and a cooler spot to be desired. Such a spot may be found when the neighbouring country has been more fully surveyed. Chughye, (or Kassasir close by it) has been thought of, but from what I saw of the place, I fear it would not answer.

The effect of sol-lunar influence in fevers is experienced to be as great here as in India.

In conclusion, I may enumerate some of the indigenous plants of this country which belong to genera, some members of which are possessed of medicinal virtues, from want of access in this place to books of reference, I am in many cases unable to determine the species.

The genera are avena (oats are found only in a wild state) allium, iris, daphne, rumex, rheum, veronica, salvia, mentha, marrubium, melissa, hyoscyamus, datura solanum, convolvulus, leontodon, centaureas, artemisia, achillea, apium, pastinaca, ranunculus, papaver, malva, althæa, rosa, amygdalus, euphorbia, ricinus, salix, juniperus, pistacia, adiantum. There are two species of pistacia that I have met with, both are found on the rocky bases of the mountains and in their ravines, one yields a resin like mastic and which is sometimes used by the hukeem as a substitute for it, the other yields a substance resembling in some measure Chian Turpentine. The juniper is a large arboreous species, its wood is the common fuel of this part of the country, its berries are possessed of much of the sensible qualities of those of its British congener, the juniperus communis, and I have tried their medicinal virtue and have found them to be

diuretic; the tree yields abundance of a resin that might be found useful in the arts. The salix (willow) yields salicine which is thought to be a valuable medicine in the treatment of intermittent fever, and a trial of the bark of the tree this season has given me a favorable opinion of it as a febrifuge. The poplar, a common tree here, but not indigenous, also yields salicine.

For the hurried manner in which I have arranged the information, that a short residence here has enabled me to possess, I must plead as an excuse the multiplied duties which have devolved on me on account of the sickness of some of my fellow medical officers.

P. S. — A friend has just given me a portion of a crystallized saline mass which he found at Karez Dost Muhummed, two marches from Mustoong on the Kelat road, and which on analysis, I find to consist of 60.3 per cent of sulphate of Soda or glauber salts; and 39.7 of chloride of sodium or common salt, with traces of lime and of iron, but not in appreciable quantities ; I detect no magnesia in it

An efflorescence that I found in a Karez at Mustoong, I ascertained to consist of the same salts with a very large admixture of carbonate of line. Salsola abounds in the neighbourhood of Mustoong.

APPENDIX.

APPENDIX.

1

Catalogue of Medicines found in the Bazaars of Hydrabad, Khyrpur and Shikarpur. By the late P. B. Lord, M. D.

1. Kayaphul. Sans. — Bark of a tree unknown ; brought from Bombay and other parts ; of a dull red colour, no taste or smell ; thick, light, and friable.—Use-reduced to powder is snuffed up for cramp.

2. Jumbu. Bark. H. and S. *Eugenia Jumbolana.* Roxb. — Bark of a tree that grows in Sindh. Use — reduced to powder ; is sprinkled on fetid ulcers for which its astringent properties may probably render it serviceable. The specimen appears perfectly inert from having been too long kept. The tree bears a berry which is eaten.

3. Munderi. H. and S. -- Found every where in Sindh. Used as a cataplasm for any external inflammation : sometimes given internally in powder with sugar for gonorrhœa ; dose one tola. Parts used, root, leaves and seed ; Taste mucilaginous.

4. Kala Dhatura. H. *D. fastuosa.* Willd. — Black seed found in jungle in Sindh, more especially on any slight eminence. Dose three masha ; strong purgative.

5. Hurmul. H. and S. *Rutaceæ.* — Grows in Belúchistan and Sindh, on hills and about tanks. The powdered seed given in fever ; dose uncertain. Used

* — I have endeavoured to indicate the language from which each name is taken and for this purpose have used the following contractions P. signifying Persian. H. Hindustani, S. Sindhi, Sans. Sanskrit, G. or Guz. Guzarathi, Arab. Arabic, Punj. Punjab ; but as I have no pretentions to be a philologist I fear I must claim indulgence for numerous errors in this part of my task.

The list of botanical synonyms is rather meagre, but except Roxburgh and Lindley I have not a single book of reference. It probably may be much increased out of Ainslie which I regret to say I have not with me.

The uses attached to each medicine are such as the native practitioners are in the habit of attributing to them.

I have given the locale from which each article was said to be brought, but the frequent recurrence of the name Khorasan induced me to inquire respecting it, and I found the native idea attached to that name, included all the hilly country west of the Indus from the Hala mountains to the confines of Persia. P. B. L.

* Note by the Secretary. — The publication of this Catalogue has been delayed till the present time, from a desire on the part of the Committee to indicate those articles which are procurable in the Bombay Bazaar. Circumstances have prevented the accomplishment of this wish, and the Committee are unwilling to withhold any longer this additional proof of the industry and zeal of its lamented author.

also in rheumatism as a fumigation said to be very powerful in its effects; no obvious result except slight cathársis and when used as a fumigation diaphoresis. Taste bitter rather nauseous ; of fresh plant extremely bitter. To be had abundantly.

Punir. S. *Physalis!* —Belúchistan, Afghánistan, hills abundant. Part used. capsule containing seeds imbedded in bitter mucilaginous matter, infusion used as laxative for children.

7. Huswak. P. — Beluchistan part used leaves and twigs forms a cooling infusion used for heat of body.

8. Guldur. P. — Hills, Parts used leaves and twigs; reduced to powder and mixed with some liquid is administered to infants and occasionally adults for fever.

9. Drammau. S. — Fragments of a small thorny shrub with five locular capsules found in Sindh. A decoction of these is used in inflammatory fever.

10. Lasuri. *Cordia myxa.* Roxb. — Drupe — grows in Sindh. Decoction used as purgative. Taste bitter-sweet ; given in mixture with other medicines.

11. Khutsu. S. P. — Taste and smell like tea. Small slender brownish leaves said to be found in hills, by which I understand them to mean Bunnoo, Bungush, &c ; used externally as a cataplasm.

12. Unab. P. — The Jujubee of Khorasán used as a purgative and occasionally for coughs. Taste slightly sweetish.

13. Wuriali. S. H. (Sorif) *Pimpin : Anis :* — Anise seed used as a carminative and generally to flavour other medicines, grows abundantly in Sindh where it is sold at twenty seers the Rupee. A duty of a quarter Rupee per maund is exacted.

14. Bukru. S. — Sindh small thorny capsule ; yellow flower ; ground and mixed with sugar is used as a tonic.

15. Bal Hyra. S. — Drupe said to grow in Malabar and to be brought here from Bombay. It is a powerful purgative and is given in powder or decoction or fried in ghee or in castor-oil. For children it is made into a confection.

16. Ledi. S. — Bark of a tree ; thick ; fibrous ; taste slightly bitter ; brought from China ; gound down on a stone is applied to the eyes in acute ophthalmia.

17. Kuddu-ka-bij. *Cucurbita lagenaria.*—Seed of a white pumpkin ; Sindh, mucilaginous cooling.

18. Kamu. S. — Seems to be a mixture of three or four different kinds of leaves said to be got in the fields and used as a cataplasm.

19. Kasni. P. and S. *Cichorium.* — Sindh ; a cooling decoction used in fevers, gonorrhœa, &c. A decoction of the seeds is also employed for making shurbut.

20. Gurfa. S. — Small seed with hot taste like carraway ; used as carminative for little children.

21. Wall. H. Q. *Dolichos Lablab.* — A pea-black with white scar used in Dhukhan as food— here used by women with alum to form astringent balls — used also internally as astringent.

22. Wavering. H. — Small black capsule fluted on sides — brought from Bombay — Vermifuge — applied externally for headaches.

23. Methe. H. Hurba. S. — Brought from Kabul but now said to be grown in Sindh. Green leaves used as a vegetable — seeds used in medicine

mixed with hulwa (confection) and said to be very efficacious in rheumatism Taste slightly aromatic.

24. Badrung. P. & S. — Seed of a cucumber found in Sindh cooling infusion.

25. Nilofer. P. *Nymphœa lotus.*— Grows in Sindh by all dhunds or tanks. Capsules resembling those of poppy but smaller. The syrup is used in fever — a medicine distilled from its leaves is refrigerant and tonic.

The root is supposed to possess aphrodisiac properties.

26. Chunukni. S. Bhawa. Sans. Umultha. H — The pods of Cassia fistula. The pulp is used as a purgative, the seeds and external corium being rejected.

27. Unt-kuchur. S. *(Camel-root)* — Root brought from Khánpur near Buhawulpur ; bitter aromatic taste ; used internally for gripes ; also externally in water as a lotion by women who suppose it gives their bodies a fragrant smell.

28. Anghar. S. Pukanhed. Sans. Gentian? — A root tortuous — thick as a finger ; light brown externally ; dark internally ; no smell ; dry bitterish taste. Brought from Kot Gungur north of Attok. Astringent ; used for dysentery dose ʒj to ʒiss — powerful.

29. Kanna. S. — Small round grain found in Sindh — tastes like vetch tribe to which it probably belongs. Used as a poultice in rheumatic attacks.

30. Bhilawa. Sans. *Semecarpus Anacardium.* — Marking nut brought from Goa ; applied externally as rubefacient for chronic rheumatism, indolent swellings, &c. The natives also use it in some of their mixtures for encreasing sensual powers, and it is said to be safely taken internally if mixed with cocoanut oil.

31. Kolijun. S. Pan-kee-ju. H. — Said to be the nut of the plant (piper betle) from which the betel-leaf is procured. Taste hot and biting. Use — for cough — griping pains — to flavour liquor with which it is distilled — and in confection. Brought here from Kurachi.

32. Kababchini. H. Cubebs. — Brought from Bombay ; used in a very fine powder for watery eyes ; used also for toothache and to diminish salivation. Use in gonorrhœa not known.

33. Kathikini. S. *(lit. rstten stick).* — Khorasán a root wrinkled thick as a caterpillar — taste bitter, slightly aromatic — use stomachic.

34. Walljowan. S. — Abundant in Sindh — small grain with aromatic taste and smell like carraways ; used by women after delivery. Dose ʒj.

35. Spunger. S. Isuf-gul. H. *Psyllium?* — Abundant in hills — small seed mucilaginous and astringent, is used in gonorrhœa and mixed with pomegranate bark in dysentery. It is also made into a shurbut.

36. Tukhon-i-valunga. P. — Seed black linear — got from Dera Ghazikhan used for shurbut and drank freely when there is much burning in clap — also in dysentery with other medicines, large dose astringent, small cooling.

37. Khakshi. *Abrus precatorius.* — A very minute reddish coloured seed from Kandahar. — used for a cooling shurbut in hot weather.

38. Shahbelut. S. Situl. Supari H. *Areca Catechu.* — Nut imported — powerful astringent in doses of ʒss. — ʒj of the powder combined with opium.

39. Balby. S. — Small black seed found in Sindh. Said to possess astringent and aphrodisiac properties.

40. Wuduwul or Mauri. S. — Imported. Fragments of leaves and twigs of a yellowish colour, aromatic taste and faint smell, used in preparing sweet smelling powders for washing. Sells here at one rupee per three seers.

41. Krukathi. S. Bitter Stick. — Twigs and root of plant brought from Jaysulmere. Used to physic horses after they return from pasture. The powder also is employed for rheumatism in doses not exceeding ʒii.

42. Podina. H. *Mentha.* — Mint brought from Khorasán and sold at fourteen seers the rupee. Eaten for indigestion; applied warm as poultice for pain of belly. No oil or spirit extracted.

43. Pahari Chanrol. H. — A rice which is said to grow spontaneously on the hills of Khorasán. It is used by the Hindús here on occasion of feasts and other religious observances. It is said to have an astringent effect and is given in dysentery.

44. Sorif-ki-jir. *Pimp : anisum.* — The root of the anise plant. It is placed all night in an earthen pot in the moonbeams. In the morning it is ground and being mixed with sugar and water forms a draught supposed to possess particularly cooling properties.

45. Sumak. *Rhus coriaria.* — Kandahar and Khorasán. A small round seed with an acid taste, always used by the natives in their curries.

46. Gul Shapur. *Polianthes tuberosa ?* — From hills to Khorasán. Leaves, seeds, twigs and flowers, of a lilac colour, all mixed together and infused in water are used to form a cooling shurbut.

47. Mumira. H. — From Yarkund. Root of plant said to be useful for dimness of sight; ground on stone, and applied externally.

48. Kali Mulli. — Khanpúr; astringent; generally used.

49. Kinera. S. *Nerium odorum.* — Grown in Sindh on bank of river. Very minute black seed; astringent; shurbut.

50. Kulfa. S. H. — The plant is used as a vegetable the seed which is extremely small and black is said to be cooling and is used for gonorrhœa.

51. Mithi Kathi. S. *Glycyr : glabra.* — Literally sweet stick. Common liquorice grown in Khorasán and used for coughs.

52. Untgum. S. — From Dadur. A seed used in confections and as an aphrodisiac.

53. Zrikuchla. S. H. *Nux vomica.* — Brought from Bombay and Peshawur; used externally for rheumatism and toothache. An oil is extracted and employed in preparing an intoxicating confection.

54. Musag. P. — Bark of a tree from Khorasán; no smell; taste slighly bitter. Native women use it to colour their lips; occasionally used as an astringent.

55. Chufala. S. — Best comes from Marwar; an inferior sent from Bombay used in Musála (spicery) and also in perfumes. Leaf black on one side and white in other.

56. Gao Zuban. H. Bugloss. — Khyrpúr where it grows; leaves and twigs all marked over with little white spots; used as a tonic after fevers, also as a stimulant; is always exhibited in decoction.

57. Marmut. S. — Cuchí about Dádur, powder of root used for wind in stomach. Taste bitter nauseous.

58. Khabazi. S. *Malva Mauritiana.* Roxb. — Grows in Scindh. Decoction of twigs and capsules is used in fever and rheumatism; also in preparing confection.

59. Gidra-ka-bij. S. Khurboza H. *Cucumis Melo.* — Sindh. Seeds of musk melon used in the preparation of a shurbut and supposed to possess a phrodisiac properties.

60. Kaul-i-peru. S. — Sindh : a slightly saline taste. Seeds expectorant used for cough ; stem for jaundice.

61. Ajwayan S. H. *Ligusticum Ajowan.* Roxb. — Found throughout Sindh : small seed ; taste of dill ; used for pain in stomach.

62. Senna. S. *Cassia Senna.* — Grows abundantly in jungle near Khyrpúr also about Shikarpúr. Purgative.

63. Kutkathi. H. — From Malwa and Bombay. A root used mixed with oil for the cure of rheumatism. It is also employed as a perfume and is sometimes mixed with tobacco to improve its flavour.

64. Kath Gulabi. *Catechu.* — Got from Lahor ; astringent ; used with cardamoms for pain of teeth and gums : — used also for dyeing : and applied externally with camphor on foul ulcers.

65. Mora Cuchee. S. — Leaves used as poultice in acute opthalmia ; powder given in gonorrhœa.

66. Pipli H. *Piper longum.* — Long pepper brought from Bombay. Sells at 12 annas the seer ; use, carminative.

67. Tukhm-i-Kahu. P. *Lactuca Sativa.* — Seed resembling the carraway in appearance ; brought from Khorasán. Ground and drank with sugar as a cooling draught.

68. Bhera. H. *Terminalia Myrobolans.* Roxb. — Imported from Hindustan. A hard horny fruit : kernel used as a purgative. Dose ʒvi.

69. Chukso. P. — A small pointed black seed ; grows in Sindh and Cutch. Powder put into the eye for ophthalmia : used internally for Rheumatism. Dose ʒiii.

70. Ahuber. S. — Khorasán. Berry with a strong taste of turpentine ; very good for pain in stomach ; also infused in oil and applied externally for rheumatism.

71. Yaralong. S. Ruttunjot. H. — Chips of bark of tree brought from Marwar and used as cataplasm for horse.

72. Plaspapra. H. *Butea frondosa.* — Seeds of palas or butea frondosa ; a powerful purgative and anthelmintic. — Cuchee, Daraja, and said to be found in Sindh on banks of river.

73. Kutti Chumri. S. — Pleasant, sweet, subacid, dried fruit, having the appearance of almond shells. Khorasán ; laxative ; used by goldsmiths to clean gold and silver.

74. Nindaja or Phagurwal. S. — Grows in Sindh. A thorny capsule with four septa ; used in fever and rheumatism : has purgative qualities.

75. Paneri or Lattuk. S. — Fragments of leaves brought from abroad and used as perfume. Sold at one rupee for two seers.

Note. To me this and other articles said to be Khushboi (perfumes) have no smell, nor can I understand why so high price should be paid for them.

76. Khutmi. P. *Malv?* — Sindh ; used as refrigerant drink in fever.

77. Piple Med. H. — Root of No. 66. Decotion given as tonic after fever.

78. Kewal. S. — Sindh ; Cutchee. Used in fever ; refrigerant.

79. Jera. H. *Cuminum Cyminum.* — Cumin seed ; Sindh ; abundant. Used as carminative, also in currystuff.

80. Sonputri. S. — Cutchee and Sindh. Used as cataplasm for pain in ear.

81. Kundru. S. — Gum from Arabia. Used for toothache and as a strengthener. Applied externally for rheumatism, on the chest for cough, and generally for any acute pain.

82 Kuttala. S. — Gum from Khanpur. Strengthener.

83. Kummer-Kush. S. — Fine red gum (Kino?) from Marwar; most powerful astringent.

84. Dhup. S. Resin. — Common yellow. Brought from Bombay. Used for ointment, also in dyeing.

85. Bheduk. S. — A stone said to be applied externally on boils.

86. Pitkudi. S. — Alum got at Hurmul-Chandea's and Cutchee. Medicine and dyeing.

87. Kala Lon. P. Khar. S. — Black salt used as purgative with other medicines. Dose 3ii ; used also in dyeing.

88. Surmah P. — Antimony ore got at Surmah-Sing, between Sonmeanee, and Khelat. Sells here at 20 rupees per maund, in Khelat Rs. 5 per maund. Used as collyrium.

89. Gogird. P. — Sulphur. Native near Bagh, when melted called gogru.

Catalogue of Medicines found in the Bazaars of Bahawulpur, Dera Ghazi Khan, and Dera Ismael Khan.

1. Kakursingi. H. — Khorasán. Reduced to powder is used for cough. Dose grains xx with honey one tola: price, one seer one rupee.

2. Papita. P. *Strychn : Colubrina.* Roxb. -- Khorasan. Most efficacious against the venom of a snake bite if rubbed on the part. Internally it is used for fever and is said to allay vomiting. One tola two rupees.

3. Post-i-jurjur. P. — From Jurjur. Taste bitter; aromatic; slightly mucilaginous. Dose one rutty. Tonic aphrodisiac : price two annas for one skin.

4. Tukhm-i-Hulyun. P. *Lipidium Sativum.* — Khorasán. Very minute seed: no smell; little taste ; light brown colour : used for preparing shurbut and confection ; strengthening : one tola one rupee.

5. Bhurungi. P. *Verbesina Prostrata.* — Khorasán. Used for cough, asthma. Dose one masha. It is also employed as a fumigation for decayed teeth, and is said to bring out worm that causes the decay: one tola two annas.

6. Mitha. H. — Khorasán. Burnt with onion or brinjal is used as an aphrodisiac, and said to be very powerful. Each fruit one anna.

7. Chobgulo. P. *Menispermum glabrum.* — Cutchee (hill country). Slightly mucilaginous. Used for cough, dryness, fever, and want of sexual powers: two seers one rupee.

8. Biswach. Islambul. P. — Given in fever, splenitis and stone in the bladder; said also to have tonic and aphrodisiac properties ; one tola two annas.

9. Tukhm-i-Gunjal. P. — Khorasán. Black seed, seems to be a vetch : has stimulating properties, and is given mixed with pearls as an aphrodisiac.

10. Kulthi. P. *Dolichos Biflorus* — Hill of Jummu. Used for strangury ; stone in the bladder; also for lying-in women ; one seer two rupees.

11. Gulgafiz. P. — Khorasán. Tonic astringent : used as an aphrodisiac. Taste slightly bitter and aromatic.

12. Konanung. P. — Khorasán. Slightly saline taste; used by Kimígurs (alchymists) to make silver; one tola one rupee.

13. Pubbrica. Pitha. H. — Khorasán. Sindh. Leaf and seed of nymphœa: used to check vomiting; astringent.

14. Khun Shasha. P. — Kerbála, a gum (lac); strengthening; used in confection; one tola four annas.

15. Mulathi. H. *Glycyrrhiza.* — Dájul near Mithun. Liquorice root; used for cough, dryness, &c. two seers one rupee.

16. Gharikhun P. *Agaric.* — Irán. Strengthening; used in confection; one tola one rupee.

17. Gul-ubbas. P. — *Mirabilis jalapa.* Buhawulpúr. Aphrodisiac.

18. Tubashir. P. — Imported. Got from Bambú; astringent: used as gargle for sore mouth; one tola six annas.

19. Shahudnach. P. — Bokhara. Diuretic; one seer twenty rupees.

20. Khedru. P. — Khorasán. Used for dryness, in confection.

21. Sut-i-gulo. P. — Extract made from No. 7; white starch-like. Used for cough, dryness and heat of body, fever, and as a tonic.

22. Basa P. — Khorasán. A leaf of green colour; smell tea-like; taste slightly mucilaginous and bitter; used for cough.

23. Gulpistan. *L. Pistacia?* — From the East. Used internally to enable women to bear children; dose two rutty.

24. Gulabkabij. P. and S. — Indigenous rose seed. Used by women in combination with other matters to form astringent balls.

25. Juft rumi. P. — Roum. A gum with slightly aromatic taste. Used in confection and generally in the preparation of aphrodisiacs; one tola sells for three rupees.

26. Hubbakak-i-bij. *Arab.* — Khorasán. Aphrodisiac; in large doses, purgative.

27. Zurnikh. P. — Khorasán. A root resembling turmeric. Used as aphrodisiac.

28. Ushun. P. — Impure liquorice from Khorasán. Used in strengthening mixtures.

29. Tajun. P. — Khorasán. Aphrodisiac.

30. Tookhmiferung, Mooskh. P. — Khorasán. Shurbut: one tola eight annas. Qr. seeds of Vinka Rosea?

31. Afabund. P. — Khorasán. Some dried fruit; mucilaginous. Used as strengthener; one tola one anna.

32. Jured-i-Bedustar. P. H. — China. (Castoreum). Most powerfully aphrodisiac; sells at eight rupees for one tola.

33. Ma-i-shutur. *Arab.* — Arabia. Extremely powerful aphrodisiac. It is made by allowing a camel's calf to drink once of its milk; the calf is then killed and the coagulum found in its stomach is this Má-i-shútur. It is applied externally and sells at nine rupees per tola.

34. Ufsuntin. *Absinthium.* — Khorasán. Fever; cough; tonic.

35. Kurayat-ki-Par. Cherayta. H. — Khorasán. Bitter; given in fever; in large dose it is laxative; in small, tonic; one tola three annas.

36. Guli Malim. P. — Khorasán. Seems to be dried rose leaves. Used as perfume and tonic: one tola one rupee.

37. Furfuryun. P. — Khorasán. A gum; tonic; aphrodisiac.

38. Nilkuchu. H. — Khorasán. A gum very strengthening.

39. Muhmira. P. — Khorasán. Externally for dimness of sight.

40. Brkh-i-Kakela. P. — (Cardamom root) powerful tonic. Khorasán.

41. Gul-i-Mamool P. — Khorasán. Aphrodisiac; in large dose laxative. Used in decoction for toothache.

42. Tukhm-i-Kusur P. — Kabul. Shurbut. Astringent.

43. Tukhm-i-Paluk. P. *Justicia.* — Indigenous; cooling.

44. Siah Ajowan. P. — Khandahar. Hot tonic: used in jaundice.

45. Ajmud P. *Opium.* — Bikanir. Grows also in desert. Hot; aromatic; (thyme or parsley ?) four seers one rupee.

46. Loda Subz. H. P. — Umritsir. Used for dyeing; astringent.

47. Pukanbed. *Gentiana.* — Umritsir. Carminative.

48. Tanocha. — Umritsir. For palpitation of the heart.

49. Krukutki. — (Lit. bitter stick). Umritsir. Used for horses; also occasionally for men as a tonic.

50. Kuttichumri. — (Lit. Sourskin) Kabul and Khorasán. Used by goldsmiths to clean gold and silver, also in curries: large dose laxative.

51. Tukhmi-khyr. P. *Cucumis Sativus.* — Indigenous. Seed of a melon: cooling; moist.

52. Hirby. Punj — From Nagowalla pahar, i. e. hills infested by snakes. I could get no more particular account of its locality than this. It is used for snake bites, and I am inclined to look on its efficacy as tolerably well established, inasmuch as I obtained a bit of this very same plant from a Bazigur or snake-charmer, whom I met at Multan, and who instanced his own experience of its powers.

53. Lod Sufaid. Punj. — Umritsir. Eye complaints: externally.

54. Nagkesur. H. *Mesua Ferea.* — Umritsir. Used in Menorrhagia; specimen seems quite inert.

55. Sena Mukki. H. — Indigenous: laxative.

56. Howai Jira. — Meeapur. Splenitis: used for children.

57. Bahara. H. *Termin. myrobulan.* — Jummu. Cathartic: used for children.

58. Hub' ul Kudrat. *Arab.* — (Lit. God's own) Khorasán. Astringent, and aphrodisiac.

59. Lod Muchuck. S. — Khorasán. Dyeing leather, five seers one rupee.

60. Koakuni. *Punj.* — Indigenous, in bank of river, used by women as an externally astringent.

61. Sawan. S. — Duraja in Sindh. Cooling; used for children; in large doses given to horses when griped.

62. Turvikathi. *Punj.* — Pale, Cathartic.

63. Chawaker. *Punj.* — Khorasán, Native rice, tonic; used by Hindus during fasts. Two seers one rupee.

64. Khurbozaka bij. H. *Cuc. mels.* — Indigenous, heating, mixed in preparing bhung. Six seers one rupee.

65. Podina. P. *Mentha Sativa.* — Dajul. Used for Horses; given in decoction or powder for gripes.

66. Tukhm-i-Kutusha. P. — Cutchee. Cooling; shurbut.

67. Wavering. H. — Umritsir and other countries. Used to expel worms from children.

68. Satur Murwa. *Origanum.* — Some sort of Marjoram. Used for wind in the stomach. Brought from Khorasán.

69. Badeumkhutai. P. — Khorasán. Taste like almonds; aphrodisiac.

70. Mochrus. *Hyperanth: Moringa.* — A red gum got from Horse radish tree, is carminative, astringent, tonic and aphrodisiac.

71. Tukhm-i-Kahu. P. *Lactuca Sativa.* — Indigenous; cooling.

72. Punir P. & S. *Physalis.* — Dajul. Laxative. Used for children.

73. Jaoze Mukuddur. P. — Jubbu ka pahar. For horse.

74. Soksamundur. P. *Courolontus Argentius?* — Indigenous. Bank of river. Astringent and aphrodisiac.

75. Shatura. P. — Indigenous; cooling.

76. Usman Puri. P. & H. — Desert. Used by women as external astringent.

77. Ajowan. H. *Ligusticam Ajowan.* — Indigenous. More generally cultivated; sown in Asú, gathered in Vesák; sells at twenty seers the rupee, aromatic, carminative and aphrodisiac; whence the proverb: —

Kahi ajowan,
Bude ka hoga juwan.

78. Pazihr. P. *Bezoar.* — Khorasán. Antidote. Used internally for snake bite or after the administration of posion: got from the intestines of several of the deer and goat species; sells at twelve rupees for one tola.

79. Ajmuda P. *Vittate.* — Khorasán. Tonic; large dose narcotic. Used for jaundice.

80. Baltunga. P. — Vellait. Stimulant; aphrodisiac.

81. Shahbalut. P. *Quercus belut.* — Vellait, (Afghánistan). Used as astringent and aphrodisiac. — N. B. It seems to be an acorn.

82. Kul Kathe. H. — Umritsir. Astringent.

83. Jira. H. *Cuminum Cyminum.* — Dajul. Aromatic and carminative. Used for griping, wind in stomach, also in curries.

84. Giruchun. Arab. — Arabia. Used for enchantment.

85. Funduk. P. — Khorasán. Tonic.

86. Pista. H. P. — Khorasán. Astringent. Used by women. Said to be pistachio nut; not to be inferred from the specimen.

87. Ishk-pecha. P. — *Ipomœa quamoclit.* — Indigenous. Used as cathartic, but causes much griping.

88. Khubkalan. P. — Vellait. Astringent.

89. Walur. Quzur. — Indigenous. Used as an external astringent by women.

90. Jir-ishk. P. — Khorasán. Aphrodisiac.

91. Babche. H. — Umritsir. Pounded and made into an ointment with oil: is used to cure itch. In decoction is used to wash unhealthy sores.

92. Kulfa-ka-Bij. — Indigenous. Cooling; moist; cathartic.

93. Gugul. H. *Amyris agallocha.* — Dajul. Cures cough in horses; also used as poultice to boil; rubbed in for rheumatic pains: (a gum).

94. Regmahi. P. — Arabia. Applied in paste as an external aphrodisiac; said to have great power, for which the practitioner referred to his own experience. one tola four rupees. It seems the exuviæ of some small snake.

95. Nem-bole. H. *Melia azadarachta.* — Indigenous. Seed of the Nim: used in poultice for *Hæmorrhoids:* used also for headache.

96. Wadawuka-gul. P. — Umritsir. Astringent.

97. Bukan. P. *Melia Sempervirens.* — Khorasán. Externally for Hæmorrhoids.

98. Medah-lukri. H. — Umritsir. Wind in stomach.

99. Bilgari. P. — Jummu. Powerful astringent. Dose one masha.

100. Tukhm-i-Balunga. P. — Indigenous. Cooling: makes good shurbet.

101. Tukhm-i-Morid. P. — Khorasán. Cooling; moist.

102. Kummer-kush. P. *Kino?* — Jummú. A very astringent gum use by women as external astringent: three seers one rupee.

103. Tukm-i-Surela. P. — Indigenous; diuretic.

104. Burg-i-Morid. P. — Leaves of No. 101. Cooling, moist.

105. Tukhm-i-Hala. P. — Indigenous. Tonic, hot, stimulant; used in rheumatism.

106. Bazgund. P. — Khorasán. Cooling: used for cough, for silk-dyeing; also by women as an external application.

107. Hunda. H. — Jummú-ka-pahar. Cathartic.

108. Kutuhul. H. — Hindustan. Astringent: used by women.

109. Babul-ka-gond. H. Mimosa. Arab. — Indigenous. Indifferent gum-arabic; used to give strength; also as confection.

110. Kuchur. *Curcuma reclinata.* — Bikanir. Decoction used as a laxative for children; the powdered root is snuffed for headache.

111. Behmun. H. — Umritsir. Strengthener.

112. Rewun-Chini. *Rheum.* — Rhubarb imported from the north: used externally for boils and internally as a laxative: sells here at eight rupees the maund.

113. Inderjausherin. H. *Nerium antidysentericum.* — Hindústan. Aphrodisiac.

114. Indurjau-tulkh. — Hindústan. Purgative, vermifuge; used also for rheumatism.

115. Putisa. P. — Khorasán. Used in confection as a tonic and aphrodisiac: is very bitter.

116. Hubar. P. — Cutchee. Carminative; used for children.

117. Harita. H. — Dilhí. Washing silken stuffs.

118. Kushkush. *Papaver.* — Indigenous. Cooling medicine; used in decoction for cough: (poppy seed).

119. Dhunnia. Guz. *Coriand. Sativ.* — Indigenous. Used in spicery for griping, wind in stomach; and sells at one and a half rupee per maund. (Coriander).

120. Hurmul. *Ruta Hurmala.* — Indigenous. Dry open jungle; used for pain in stomach, wind, also in fumigation to expel devil from men's bodies.

121. Sorif. H. *Pimpinella anisum.* — Indigenous. Mixed with cathartics to prevent griping; distilled for shurbet; used in pilao, sweetmeat, curries: used in gonorrhœa: six seers one rupee.

122. Kasni. P. *Cichoreum intuba.* — Indigenous. Cooling; gonorrhœa.

123. Hurba. H. *Terminalia Citrina.* — Umritsir. Cathartic: five seers one rupee.

124. Pipli. H. *Piper nigrum.* — Dilhi. Rheumatism; griping: one seer one rupee.

125. Jira-siyah. P. — Manvar. Horse medicine; also used in decoction for fever.

126. Sakur. S. Mai U'kaki. P. *Tamarix diœcia.* — Tamrisk. Gall nut got of the male tree. Indigenous: used for dyeing chints; by women as an astringent: one maund sells for two and a half rupees.

127. Munjit. *Rubia tinctoria.* -- Ghuzní, Kábul, Yarkund. Dyeing chintz; decoction, tonic ; four and a half seer for one rupee.

128. Girnulli. S. Amulthas. P. *Cassia fistula.* -- Indigenous. Umritsir, Sindh. Extract cathartic ; sells at four seers the rupee.

129. Sujji-khar. H. -- An impure carbonate of soda got from the lána (Salsoda); a desert plant ; indigenous ; used for washing, dyeing, making glass, given for cough ; in large doses laxative ; taste saltish ; one maund sells for ten annas.

130. Pitkuri. H. -- Kálabágh. Var. Red Alum. Washing ; dyeing, astringent; burnt is made into gargle for ulcerated mouth ; six seers one rupee.

131. Lon. H. -- Pind-dadumkhán. Common salt.

132. Pitkari. H. -- White alum from Dajul. three seers one rupee.

133. Imam-sunbul. P. -- Arsenic (sulphuret ?) country not known ; one seer four rupees. Chemical.

134. Firoza-Zurd. P. -- Arsenic (?) Irán : chemical ; one seer two rupees.

135. Sunkiah. P. Arsenic Do. Do. Do.

136. Sung-i-lajvurd. P. -- Khorasán, Kábul. Used in confection mixed with pearls and spices as an aphrodisiac. The specimen is a pretty one of Lapis Lazuli. Contains pyrites.

137. Reg-musan. P. -- Khorasán. Stone in the bladder ; gravel ; dose half rutty ; one tola five rupees.

It seems to be merely tabular crystals of an impure salt.

138. Kuj. Punj. -- Khorasán. Used in indigestion ; seems still to be only impure muriate of soda : but I have tried no test.

139. Zurd Sunkiah. P. -- Country not known ; chemical : one seer four rupees. A small dose is given in obstinate intermittent fever ; he says half rutty (sulpt. arsenic).

140. Pistakhi Sunbul. P. -- Khorasán. Another preparation of arsenic ; chemical.

141. Khujamun. Sindhi. -- Bokhara. Looks like crystallized gypsum, and tastes not unlike alum : used as astringent by women : one tola one anna.

142. Ruskapur. P. -- Bombay, (Oxy. Mur. Hydrarg.) to produce salivation in venereal ; small dose aphrodisiac ; chemical : one tola four annas.

143. Ihsani Surmah. P. -- Irán. Used for dim sight : one tola eight annas (antimony ore).

144. Hazar Sung. P. -- Khorasán. Burned is used in confection as an aphrodisiac ; one tola one anna. (Filamentous gypsum) ?

Catalogue of Seeds, Roots, &c. collected between Mithunkot and Dera Ghazi Khan.

1. Napo. Punj. Kaounul. H. — The lotus -- *Nymphœa Lotus* — Got in dhunds or pools of standing water. Seeds used as a cooling medicine Made into bread by poor people. Seeds collected in Budru (Sept.) or Asu (Oct.) Plant spring up in Jeth (June).

2. Lohur. S. — A sort of tuber or earth nut used as vegetable. Taste not unlike indifferent potatoe ; skin thick, wrinkled hairy and dark ; tuber internally white.

3. Kuder, Punj. — A sword-leaved juncus. — Leaves used for making mats; also for the manufacture of a rope which from its softness is used by the boatmen to put round their bodies when tracking their boats. (V. specimen.) Root given to cows and buffaloes to encrease quantity of milk; shape of root like ginger; externally black, internally white; tastes sweet; grows in banks of river principally above Mithun where inundation is general. The fruit is used as a vulnerary. It forms a long soft glumous head resembling tinder or sponge; the office of which it probably performs. A yellowish sweet farina is also extracted from this head (probably when it contains the blossoms) which the natives knead with water and make into cakes. I think I put a specimen of this also into the box, it had much the appearance of a lump of gamboge, but was soft and crumbling.

4. Imli. H. *Tamarindus Indica.* — The seeds used as astringent. Pulp of pods cooling and laxative. Dose 4 to 6 tolas. Used also, in shurbut and curry.

5. Lasura H. *Cordia Myxa?* Roxb. — A sorts of plum. Grows generally over country called Bokra in the Dukhun, where it is used for pickling. Used here as strengthening medicine: the tree is very large.

6. Pubbun. Punj. — Described also in a speices of Nymphæa found always in dhunds. Stalk of the plant called *beh* used as an astringent. The juice extracted from the root by incision is used in looseness and vomiting; is also considered diuretic and cooling. Seeds eaten as fruit.

7. Motian. — Red rice -- grows near Mithunkot.

8. Kaysaphul. Punj. — Flower used in dyeing. Seems to be the flower of *Butea Frondosa.* Says it is found in abundance in the jungle at Ahmudpúr, Buháwulpúr and generally in the Daúdpútra country. Flowers in Jeth (June)

9. Lalre Chunna. Punj. — Red gram.

10. Rutra. Punj — Red juwari.

11. Kala Chunna. — Black gram (cultivated grains).

12. Mot. Punj. — Mut.

13. Suffaid Mut.

14. Bhunjla. Punj — Another kind of red rice.

15. Tru. Punj. *Cuc. Colocynth.* — Grows in the jungle around Buháwulpúr, Ahmudpúr, &c. and at Mithunkot abundantly. Plant creeping; flower yellow; fruit round; blossoms in Sawun (August). Used generally as a purgative.

16. Kewuri. Punj. — Used as food in time of famine. Seems of a very inferior description.

17. Kulunga. Punj. -- A kind of rice.

18. Suttra. Punj. — Another variety of rice.

19. Pogpulhari. Punj. — A grass eaten by camels: grows in the jungle.

20. Putrahul. Punj. — A sort of grass cut for horses.

21. Thun. Punj. — Garlic.

22 Raowa. Punj. — *Amaranthus polygamus.* Cultivated and used as a vegetable.

23. Hurnol. Punj. *Palma Christi.* — Castor oil seed. Cultivated extensively. Used externally us an application for rheumatism, leaf made hot applied for same purpose; oil extracted after external husk has been removed.

24. Bukayan. H. — *Melia sempervirens.* A species of Nim; a wash made with the leaf is used to kill lice in the heads of children. The timber is said to be useful.

25. Isuf Gul. P. *Psyllium?* — Grown in gardens and used as cooling medicine and in preparing a shurbut.

26. Nidamuni. Punj. *Amygdalus Communis.* — The almond; plentiful at Dajul. A few trees are to be found down at Mithunkot.

27. Ohar. S. — Mustard: cultivated.

28. Mung. *Phaseolus mango* : -- Cultivated.

29. Kalla Dhatura. *D. fastuosa.* — Cultivated seeds used as purgative; said not to have any intoxicating quality.

30. Halo. Punj. — Cultivated. Used as vegetable and as cooling medicine.

31. Ma. Punj. *Phaseolus maximus.* Mash. H. — A vetch: cultivated.

32. Silan. Punj. — A vegetable.

33. Pohar Punj. — Nothing known of these but the name.

34. Wull Punj. — do. do. do.

Catalogue of Garden seeds collected at Multan (and contained in Baskets, Nos. vii and viii.)

1. Nafirman. P. —Sown in Káthee (November); flowers in Phagun (March): no smell.

2. Gul-i-Lala. P. — Tulip sown in November; flowers in April.

3. Tukmah. S. Umber. Punj. Padsha Pusand. P.— Sown as above; blue flower.

4. Gul-i-shumro. P. — Sweet scented; colour brown.

5. Do. do Of a red colour.

6. Do. do White (*Polyanthes tuberosa ?*)

7. Do. do. Golden yellow.

8. Ashrafi. P.

9. Guli Sudberg. P. *Rosa glandulifera.* Roxb. — Sown in Jeth, Asad, (June, July); flowers in Kathee, (Nov.)

10. Mukhmali Kulinga. Probably *Gomphrena globosa.* — Velvety Kulinga; red colour; large round flower; sown in June; flowers in November: remains in flower three months; no smell.

11. Tukhma. S. — Red flower; sown in Asad (Oct.) flowers in November.

12. Chuka. P. *Oxalis?* — Used when green as a vegetable; said to have a sour taste; sown in Nov. flowers in April.

13. Gul-i-khairu. P. — Holly hock.

14. Gul-i-ajab. *Hibiscus Mutabilis.* -- Sown, in Phagun (March); flowers in November, or should it fail then in the following March.

15 Gul-i-shuma. — Sown in March; flowers June -- October.

16. Tali. S. *Dalbergia Sisoo.* Roxb. — Large legume bearing tree; flowers in April; seeds scarcely ripe yet (19 June) Sown in Sawun (August) becomes a large tree in 12 years if freely supplied with water; timber exellent; specimen sent.

17. Kachnar. *Bauhinia variegata.* — Sown in August; a large and handsome tree; leaves doubly heart shaped. (See drawing) timber not useful Seeds used as a vegetable and pickled.

18. Suhanjily. — Also a large garden tree; seed used as above. Sown in Phagun, flowers in three years and attains a good height. It is probably different from the Hyperanthera moringa, though the native names (subhanjana and suhanjila) are nearly alike.

Basket No. ix. miscellaneous garden and wild seeds, many of them duplicates, collected in Buhawul Khán's country, and between Mithunkot and Dera Gházi Khán.

Catalogue of specimens of Timber in common use along the line of the Indus.

1. Ber. *Zizyphus jujube.* — General carpentry and building. At Ghora Bari for ship building. Tree said to attain a height of forty to sixty háth, and a girth equal to the span of three men. Best trees I saw were at Ludwana (on road from Hydrabad to Khyrpúr) but none of them reached this magnitude.

2. Timmer. —Used in building for ships knees found at Ghora Barí. Size not well known.

3. Vellaiti Kikur. — Variety of Babool (Acacia) found abundantly near Chachur. I am told it reaches 60 háths in height and 2 yards in girth, but I never saw this.

4. Karor. — Ghora Barí. Used for house building, rafters; seldom attains a greater scantling than specimen sent.

5. Kye. — Tamarisk every where through Sindh. Attains a height of 12 háths (18 feet) and squares to 18 inches. Used for house building, ship building and firewood.

6. Kuril. — The caper tree or rather bush; sometimes so gross as to square to 12 inches or even upwards; used for building, also turned into wooden mortars for pounding bang in.

7. Tali. *Dalbergia Sisu.* Roxb. — The most useful timber in Sindh; grows to 40 háths high and 2 men's span in girth. Used for shipbuilding, houses, furniture, stamps for printing cotton, and I have no doubt, would answer for common wood engravings.

2.

General Remarks on the remedial effects of the extract of Ganja as observed at the Native General Hospital at Bombay; forwarded with two cases of Tetanus, treated in that Institution. By A. Graham, Esq.

Although one of the two accompanying cases terminated fatally, yet the good effects of the remedy were so manifest throughout the patient's illness, after his admission into hospital, in the mitigation by him experienced of his extreme sufferings, that I am happy in being able to say, that in severe cases of the disease, and under circumstances similar to the present, where a cure is not to be effected, from the patient not applying early, that yet, as in the case before us, the transit to the grave may be greatly smoothed, by the disease being in some degree stript of its most formidable characteristics; and I am of opinion, that had this man applied earlier, and before he became so much worn, and exhausted, that a still more happy result would have followed the use of the extract of Ganja in his case. Its effects on the vascular system in calming, reducing, and then sustaining uniformity in the circulation have been obvious, and this quality, as manifested in the successful case, deserves particular attention. The remedy would seem to possess properties of a sedative, anodyne, and anti-spasmodic nature combined.

The remedy has likewise been used in small doses in rheumatism, in its

various forms, in combination, and would seem to add to the good effects of the other medicines; particularly in cases, where the patients have been addicted to the previous use of intoxicating liquors, or stupifying drugs, and in febrile cases, where the circulation was much disturbed, and where high nervous excitement existed. — Combined with diaphoretic medicines, it seemed to assist in cutting short the disease. — It does not confine the bowels, and I incline to think that it rather disposes them to be moved than otherwise.

Case 1st. — *Lacerated Wound.* — Dugreah, boy, admitted 15th February 1841; aged about 13 years. Whilst in the act of getting off a cart yesterday, the Bullocks took fright dragged on the cart, and his right leg, came in contact with the outer edge of one of the revolving wheels, which lacerated the integuments, and superficial muscles, to a very great extent, from below the knee anteriorly, and along the outer leg, to near the instep; wound, is very painful; feels chilly. ℞ Mist. Camph. ℥i. Spt. Æther. Nitros. m. xx. Vin. Ipecacuanh. m. xxx. Tinct. Mur. Morph. m. xx. m. bis n. s. ℞ Hyd. c. Creta gr. v. Pulv. Ipecac. Comp. gr. v. in pil. nocte s. Diet, congee and milk.

16th. — Surface warm; some swelling in the leg, and much pain; tongue white, moist. ℞ Mist. Camph ℥i. Spt. Æther. Nitros. m. xxv. Vin. Ipecac. m. xxx. Sol. Ant. Tart. ℥ii. m. ter in die s. ℞ Hyd. c. Creta gr. iii. Pulv. Ipecac. Comp. gr. v. in pil. bis die s. Lot. Frigid. ad. p. d. 6. P. M. *Vesp.* Capt. Solut. Ant. Tart. ℥ii. Spt. Æther Nitros. m. xx. Soda Tartarizat. ℥ii. m. s. s. 10 P. M. ℞ Sol. Ant. Tart. ℥i. Spt. Æther. Nitros. m. xx. m. ter nocte s.

17th. — Had violent fever last evening, and great increase of pain in the wounded leg. These symptoms are greatly lessened since, but the knee joint is swollen, hot, tender and painful. Bowels not moved. Hirud. xxiv. ad. genu. dolent. Lot. frigid post. ℞ Calomel gr. v. Pulv. Jalap. Comp. ℥i. Aquæ Puræ ℥i. m. stat. s. *Vesp.* Capt. Statim. Sol. Ant. Tart. ℥ii. et omni 3tia. hora. Repet. ℞ Hyd. c. Creta. Pulv. Ipecac. Comp. āā gr. v. nocte s.

18th. — As at last report. Hirud. xxxvi. ad p. d. Genu. ℞ Sol. Ant. Tart. ℥i. Vin. Ipecac. m. xx. Spt. Æther nitros. m. xx. m. ter in die s. Catapl. ad ulcer.

19th. — Had a violent fit of fever last evening, with increased pain in the wounded limb, all of which have since been relieved. Skin nearly of natural temperature; bowels open; pulse quick. The bruised integument along the wound has begun to slough. ℞ Hyd. c. Creta. gr. v. Pulv. Ipecac. Comp. gr. vi. in pil. bis die s. Cont. med. Diaphoret. ter indie. Cont. Catapl. *Vesper.* ℞ Mist. Camph. ℥i. Vin. Ipecac. m xxx. Spt. Æther. nitros. m. xv. Tinct. M. Morph. m. x. m bis nocte s.

21st. — Wound less painful, sloughing process going on. Has evening fever; bowels regular; appetite good. ℞ Quininæ Sulphas. gr. iii Decoct. Cinchon. ℥ii. Acid. Sulph. Aromat. m. v. T. M. Morph. m. xx. ft. ter die s. (at 7, 11, and 2 o'clock.)

22nd. — Feverish this morning, makes no complaint; bowels free. ℞ Liq. Acet. Ammon. ℥iv. Mist. Camph. ℥i. Spt. Æther. Nitros. m. xx. Tinct. M. Morph. m. x. Vin. Ant. Tart. ℥ss. m. ter in die s.

23rd. — Free from fever this morning; pulse quick; bowels regular; ulcer suppurating, and granulations rising; complains very little. ℞ Mist. Camph. ℥ii. Quininæ Sulph. gr. i. Spt. Æther. Nitros. m. x. m. ter die sumend.

24th. — Lot. S. Cupri ad ulcer. Cont. med. ter die. ℞ Hyd. c. Creta gr. v. Pulv. Ipecac. Comp. gr. vi. Ext. Hyosc. gr. ij. in Pil. h. s. s. *Vesp.* Omit. pil. gargar, pro ore.

25th. — Gums tender ; sore granular ; surface very extensive ; general irritation diminished ; bowels regular. Cont. med. Tonica bis in die s. *Vesp.* Complains of some stiffness in the jaws with a little pain, and some inability to swallow ; does not now complain of his gums, or teeth ; bowels free ; ulcer very extensive, but clean and healthy looking. Fotus p. d. ℞ Pulv. Ipecac. Comp. gr. x. Ext. Hyoscyami gr. iij. in pil. h. s. s.

26th. — As last evening. Linimt. Stimulans. Infric. p. d. — ℞ Pulv. Ipecac. Comp. gr. x. Pulv. Ipecac. gr. i. in pil ii. bis die sumend. *Vesp.* Infric. ungt. Hyd. Comp. ʒi. Opii. gr. v. Femor.

27th. — Stiffness of jaws continues, and has rather increased ; has an altered expression of face ; bowels open ; pulse 80, soft. ℞. Pulv. Ipecac. Comp. gr. vi. Pulv. Ipecac. gr. i. Ext. Hyoscyami gr. iii. in Pil. bis die sumend. Cont. Infric, &c.

28th. — Stiffness of jaws continues, and is gradually increasing ; forehead corrugated, and expressive of anxiety ; bowels twice moved yesterday ; pulse the same ; ulcer not troublesome, and healing ; skin cool, and soft ; pulse 80, when quiet, 120 on exertion. ℞ Calomel gr. iii. Pulv. Ipecac. gr. ii. Pulv. Jacobi gr. ii. Ext. Opii. gr. i. in pil. bis die s. Cont. Infri. Lint. Hydr. u. a.

March 1st, 7 A. M. — Spasm of jaws continues, and is increasing gradually ; has now considerable rigidity of the muscles of the neck, with some pain at the nape ; pulse continues at 80, when quiet, but on getting from the horizontal to a sitting posture is accelerated to 120 ; skin soft, and cool ; ulcer causes him no trouble ; bowels open ; voids his urine frequently, and freely. ℞ Ext. of Hemp gr. i. omni 2da. hora, s.

2nd. — Took 12 grains of the Hemp extract during yesterday, and last night, without expressing himself benefitted or relieved ; the symptoms do not seem to have increased any since last night. Continue medicine.

3rd. — Took 27 grains of extract since yesterday ; has been under its narcotic influence in a high degree ; twitchings come on in the back, and produce great suffering ; distortion of countenance continues ; bowels moved once in twenty-four hours ; passes urine seldom, and but scantily ; pulse has been at about 90 since last report.

4th. — Has taken 26 grains of extract since yerterday; symptoms as then detailed ; slept badly at night, but had intervals of repose during the day ; pulse 90 ; skin warm, and clammy. Continue medicine.

5th. — Slept a good deal yesterday at different times, but passed a sleepless night ; complains of giddiness and stupor ; twitchings less frequent, or severe ; — jaws rigid, and protrudes the tongue with difficulty, and then only partially ; tongue moist, white ; pulse the same ; ulcer healthy ; 30 grains of extract given since last report. Continue the medicine in 3 grain doses every hour. Food.

6th. — Has taken 24 grains of the Hemp since last report ; spasms more severe this morning, and severe opisthotonos present ; bowels not moved ; takes conjee ; pulse 70 ; alseep ; calm ; skin clammy, cool. Continue medicine. Soup.

7th. — Has taken 39 grains of the extract since last report, the rigidity returns with severity when the effects of the medicine seem to wear off a little with convulsive twitchings of the back, and nape ; corrugation of forehead, and

distortion of face less ; has much desire for food ; protrudes his tongue more, and with freedom, which is white, and rather dry ; bowels not moved ; voids urine seldom; skin cool, and clammy ; pulse calm, soft, and about 80. Continue medicine. Enema Purgant Tereb. Soup.

8th. — Has taken 35 grains of the extract since last report ; great stiffness of the jaws and muscles of the back and neck ; bowels not moved. Continue medicine.

9th. — 20 grains of the extract of Hemp taken since last report ; rigidity of muscles generally continues very great, and twitchings also continue but are lighter ; bowels once moved by a Turpentine enema; protrudes the tongue considerably, but with difficulty ; pulse 80 ; appetite good ; slept last night. Continue medicine.

10th. — Took 39 grains of the medicine since last report ; expresses that he feels himself better this, than any morning as yet ; opisthotonos, and twitchings much better ; bowels open ; appetite good ; jaws stiff; muscles of abdomen still tense, but rather less so then before ; pulse the same. Continue medicine u. a. (grain vi. stat.)

11th. — Has taken in all 51 grains of the medicine since last report, and is under its narcotic influence in a high degree ; twitchings not so frequent ; protrudes his tongue more ; expression of countenance more natural whilst asleep ; soon relapses into his stupid sleepy state when left alone, after being roused ; abdomen less rigid ; no medicine. Full diet.

12th. — Took none of the extract all yesterday, but the symptoms returning with their former severity, recourse was again had to the medicine, and 15 grains were given during last night ; slept little ; has two or three spasmodic twitchings in an hour ; bowels not moved ; is now drowsy. Continue extract grains iii.

13th. — 32 grains of the extract given yesterday; continues in much the same condition ; bowels once freely moved without an enema ; pulse about 70 at all times. Continue medicine.

14th. —Took 24 grains of the medicine since last report ; passed an easy day, but had a restless night ; bowels opened once ; pulse the same ; complains of pain in the nape of neck this morning ; ulcer healing ; countenance more anxious. Continue medicine.

15th —39 grains of extract taken since yesterday ; bowels opened once since Is in all respects in nearly the same state. Continue medicine.

16th. — 21 grains of the medicine given since last report ; symptoms continue the same ; but complains of his nape more this morning ; the muscles here are stiff and tender on pressure ; bowels opened daily naturally. Continue medicine. Fotus ad nape.

17th. — 42 grains of extract given since yesterday ; muscles of the neck stiff; opens his mouth more, and feels generally better ; bowels natural. Continue medicine.

18th. — 42 grains of the extract taken since yesterday ; goes on improving ; bowels act naturally ; pulse regular ; appetite good. Continue medicine Fomentations and warm liniment to be rubbed into nape and back.

19th. — 42 grains of extract taken since last report ; symptoms gradually yielding ; muscles of nape still stiff and tender ; appetite great ; bowels act naturally. Continue medicine.

20th. — 36 grains of extract given since last report; goes on improving steadily. Continue medicine.

21st. — As last report: the same quantity of extract given since yesterday. Continue medicine.

22nd. — 3 grains of the extract only given since last report; does not seem to feel the omission of the medicine, and continues expressing himself better; complains only of stiffness, and soreness in his neck, on standing erect (which now he can do) the abdominal muscles become rigid: has a voracious appetite for food; bowels open; liniment and fotus to nape, &c.

23rd. — Took last night 6 grains of the extract, he did not complain more than usual yesterday; but the muscles appeared a little more rigid when standing erect; ulcer discharging freely, and healing; surface granular, and still extensive; bowels regular. Lot. Zinci. Sulph. (gr. vi. ad ʒi. Spt. Lav.) *Vesper.* Rept. med. gr. vi. h. s.

24th. — As last report. 25th — Had none of the extract yesterday, and did not seem to miss it; slept well; bowels natural. 26th. — As yesterday. R. Decoct. Cichon. ʒii. ter in die sumend. 27th. — Ulcer healing slowly; surface healthy, and granular; edges indolent rather. Continue medicine. 29th — Doing well. Continue medicine. 31st. — Doing well. Continue medicine. *April 1st.* — Ulcer healing. Continue medicine. 5th — Idem. 10th. — Idem. 16th. — Convalescent. Omit Cinchonæ. Contin. Lot. Zinci. Sulph. c. Spt. Lavand. ad. ulcer. 21st. — Free from complaint. Discharged.

Case 2nd *Tetanus Traumatica.* — *March* 2nd. — Ramah Soortee, a thin spare man, admitted labouring under violent Tetanic spasms of the whole body, neck, and limbs, with great rigidity, and stiffness of every part, but, of the left leg and foot in particular, which are greatly curved, and the toes drawn downwards; jaws firmly closed, so that scarcely can the edge of a thin iron spoon be introduced between them; pulse 150; surface clammy; and the neck, and shoulders, bedewed with clammy moisture; has aggravation of the spasms on attempting to swallow liquids, which alone he can take, but, with much difficulty and suffering on the occasions. — These symptoms first appeared three days ago, and originated in a puncture on the sole of the left foot, from a nail, nine days ago; bowels not moved, and no urine voided the last two days; during which period he has taken no food; sleeps none; and has twitchings at short intervals producing opisthotonos; great thirst; countenance distorted. R. Extract Hemp gr. v. Spirit. Rectific. ʒi. m stat. Repeat the Ext. Hemp. gr. iii. every second hour. Enema Terebinthinæ.

3rd. — 6 A. M. Has taken since 3 P. M. yesterday, 21 grains of the extract; can open his mouth a little now, and has obtained snatches of repose, and ease; symptoms though a little mitigated, are all still present; pulse 120. Continue medicine.

4th. — Has taken since 6 A. M. yesterday, 47 grains of the extract with some further benefit; can now protrude his tongue with ease; and there is less general spasm, or rigidity; can take conjee; pulse 120; tongue excited; has slept a good deal at intervals; bowels moved by a terebenthinæ enema, and has voided urine; complains of great thirst. Continue medicine.

5th. — Has taken since yesterday morning 23 grains of extract of Hemp; complained all day of giddiness, and could not keep his eyes open; had more frequent twitchings, which were very severe; perspired about neck, face, and

chest, profusely ; toes of the right feet curved and drawn downwards ; those of the left feet drawn upwards on the dorsum of the foot ; bowels moved last night ; pulse has since yesterday's report been about 124, firm ; feels appetite, and takes food ; cannot this morning open his jaws widely, or with the ease of the last two days ; on the least exertion, the muscular twitchings annoy him ; countenance anxious ; skin warm, and clammy.

6th. — P. M. Has up to this hour taken 46 grains of the medicine, which induces lethargy, (from which he is however easily roused) and relaxation of the spasms in a great degree, with diminution of the frequency, and severity of the convulsive twitchings, which begin in the left foot, and extend upwards, along the back ; can again protrude his tongue with great freedom ; has no inclination to take food, and cannot be easily induced to do so, seemingly from inability to swallow easily ; pulse smaller, 120 ; skin clammy ; bowels have been moved, and has voided urine ; looks very much exhausted, and emaciated ; breathing short, and hurried.

10th. — P. M. No change took place up to this hour when he died : Had not taken any more of the medicine, and refused soups, or conjee.

3.

Extract from the Annual Report of the sick in Hospital of the 10th Regiment, N. I. Stationed at Aden, for 1840. By C. Black, Esq.

Presented by the Medical Board, April, 1841.

General Observations — The prevailing diseases in the 10th Regiment. N. I. during the year 1840, have been scorbutus, fever, rheumatism, and ulcers, Of these, the cases of scorbutus, and the ulcers have been by far the most obstinate and difficult to treat. Since the period of my receiving medical charge of the Regiment, eleven men have died from different causes, but in each, with the exception of Quire, the Quarter Master Serjeant, the disease was more or less complicated with scurvy. Previous to my arrival at Aden, the deaths amounted to 41 and by the last accounts from Bombay, 33 of those sent away sick, are reported to have died, either during the voyage or after their arrival at the Presidency, making in all, 85. From the reports already forwarded, it will be seen that the admissions were most numerous during the hot weather, and gradually began to diminish as the cold season advanced, when the roads being open, fresh vegetables were procurable in the bazar. More cases of scurvy having been admitted, than of any other disease, and that likewise having proved the most fatal in the 10th Regiment, though it is not named as one of the diseases, on which the medical officer is expected to report. I shall first give a sketch of the chief symptoms presented by it, and of the manner in which they were treated.

Scorbutus. — The patients affected with scurvy, first began to complain of tenderness of the gums, with loss of appetite and debility, but did not generally apply for admission to hospital, before sloughing had commenced with ulceration and oozing of blood ; in many cases the gums became so much swollen, as to

cover the teeth, and completely prevent the possibility of chewing. The cheeks likewise become swollen : as the disease advanced the patients began to complain of pains in the extremities ; especially stretching, along the shin bones, with swelling of the ankles, and stiffness, of most of the larger joints. Large dark colored blotches appeared on different parts of the body, and occasionally vesications, which on being ruptured were seen to contain a fœtid fluid, having the appearance of decayed blood, and the skin underneath was found to have mortified. On the removal of the slough a deep cavity was left, the edges of which soon became hard and elevated, with the surrounding margin of a livid color, very tender on pressure. The sores thus formed were attended by so much pain as totally to prevent sleep, and the gentlest touch on the surface of them, was followed by an oozing of blood. In the scorbutic cases, the sligtest bruise, was followed by sloughing and ulceration, and this sometimes spread with so much rapidity, as soon to endanger the life of the patient. The large ulcers were accompanied by more or less of constitutional irritation, such as frequent rigors, and profuse sweats. Death was usually preceded by œdema of the lower extremities, and in some cases the whole body became anasarcous. The termination was generally very sudden. The patient in the morning presenting no unusual symptom, would in the course of the day be seized with great difficulty of breathing, the pulse at the wrist become almost impercepti-ble, and the extremities cold. In five, or six hours life became extinct. In the few cases in which an examination of the body could be obtained, nothing was discovered to account for the symptoms, but a slight effusion into the pleura and pericardium, with congestion of the lungs posteriorly.

Notwithstanding the constant use of lime juice, sugar, beer, and arrack, with different tonic medicines, no favourable change was observed in the scorbutic cases, until about the end of October, when the bazar began to be supplied with fresh succulent vegetables from the interior, which were liberally dispensed in hospital ; then a decided improvement was observed, and by the middle of December, the disease had almost entirely disappeared. Charcoal poultices were applied to the ulcers till the separation of the slough, when the sores, after being washed with solution of chloride of lime, were dressed with resinous ointment, or lint dipped in turpentine, and when the granulations assumed a healthy appearance, they were touched daily round the edges with sulphas cupri, or nitras argenti. During the day to allay pain, large doses of opium, combined with camphor were repeatedly administered, and strong narcotic draughts was given at night to induce sleep.

This treatment has been persevered in since the period of my receiving charge, and though very tedious, it has proved eminently successful, most of the ulcer cases admitted having been dismissed cured, and those at present remaining in hospital presenting a healthy appearance.

Fever. — The remittent form of fever has been the most prevalent at Aden, but the cases of it have been of a very mild description, presenting no unusual symptom, and seldom requiring to be kept in hospital more than 10 or 12 days, The treatment was similar to that usually adopted in India.

Rheumatism. — The most common form admitted into hospital, has been of a sub-acute character, presenting little or no appearance of inflammation, pulse generally small and weak ; skin cool : the treatment that appeared to benefit

them most consisted of mild diaphoretics, accompanied by stimulating frictions, and the occasional application of a blister, attending at the same time to the state of the bowels. Tonics such as gentian combined with quinine, were given to complete the cure.

4.

Extract from the Second half yearly Report of the Oculists Department for 1840. By M. Stovell, Esq.

Presented by the Medical Board, February, 1841.

Purulent opthalmia. — During a part of the monsoon purulent and catarrhal opthalmia prevailed to a considerable extent, but generally in a mild form ; a few cases however of a very severe purulent opthalmia presented themselves and afforded me more opportunities of appreciating the very beneficial result of Mr. Tyrrell's method of treatment which I detailed in my first half yearly report.

The Board will perhaps allow me to allude to one case in particular, both because it afforded under peculiar circumstances satisfactory evidence of the success of his mode of treatment, and because it occurred in a patient of Surgeon Montgomery of the 1st Battalion of Artillery, who was I believe fully convinced of the claims to attention which the treatment alluded to demands.

On August 12th, Corporal Jennings of the 1st Battalion of Artillery, was admitted with purulent opthalmia in both eyes in a mild form ; the usual routine of treatment was adopted but without any improvement, and on the 14th he was attacked with delirium tremens which increased in violence, rapidly ; the purulent inflammation in his right eye also assumed a violent character and increased in intensity till the 16th, at which time the upper lid was enormously swollen and of a florid color, there was considerable deposit in the cellular tissue beneath the conjunctiva producing chemosis to such an extent that it considerably overlapped the margin of the cornea, the purulent discharge was abundant and yellowish, and the cornea had partly lost its brilliancy, and to a small extent was hazy, it was evidently beginning to lose its vitality from the arrest of its arterial supply. The delirium tremens continued severe. Doctor Montgomery and I atended him together :—his constitutional state would not admit of depletion and the cornea of his right eye was just in that state in which it would certainly have sloughed out in a few hours, had nothing been done to arrest the progress of the disease, and to restore the circulation in the conjunctival vessels supplying the cornea which had been arrested by the deposit in the cellular tissue beneath the conjunctiva, where it is so firmly bound down over the junction of the cornea and sclerotic. It was an excellent case for testing the efficacy of Mr. Tyrrell's treatment, I therefore with the view, on his principle, of restoring the circulation in the vessels alluded to made eight deep incisions with an extraction knife through the chemosed conjunctiva, commencing at the margin of the cornea and carrying the knife backwards between the attachments of the recti muscles, between each of which I made two incisions. The result was very satisfactory ; in the evening of the same day the haziness of the cornea had nearly disappeared, and on the following day, the 17th, the eye was

considerably less inflamed; the chemosis was much reduced in extent and the discharge much diminished From this time the eye rapidly improved. On the 21st there was neither chemosis nor discharge; and by the 24th, so rapid had been the change to healthy action that the eye was perfectly free from inflammation. I consider the result of this case as a strong proof of the correctness of the pathological views on which Mr. Tyrrell founded his treatment, and I believe that the eye would certainly have been lost, had his treatment not been adopted.

The same treatment was resorted to with success in the case of Havildar Sewdeal Sing of the Golundauze Battalion, another patient of Surgeon Montgomery, but as there was no peculiarity in this case, I will not trouble the Board by enlarging on it.

5.

Case of Hydrophobia.

Presented by the Medical Board.

On Sunday the 8th of August, 1841, at half past 10 o'clock A. M. I was informed by Lieutenant ———, that ———, (then out with a hog-hunting party at Serulgaon, about sixteen miles from Ahmednuggur) had evinced symptoms of Hydrophobia the evening before, and no time was lost in dispatching Assistant Surgeon ———, with a palankeen to his aid.

On his arrival at Serulgaon, Mr. ———, found the patient labouring under great mental depression, intense thirst, prostration of strenght, and occasional intense nervous excitement; surface cool; pluse full and frequent; great anxiety and restlessness, with freqent recurrence of violent spasms in the muscles of the throat preventing deglutition, and brought on by exposure to cool air, the sight of fluids, or the sudden approach of any person towards him. After considerable delay and difficulty, twenty-four onnces of blood were abstracted from the arm, and about our drachm of Tinct. Opii was swallowed, having been previously dropped on dry toast, and after most excruciating suffering from spasms, caused by placing him in the palankeen, he reached Nuggur at half past eleven o'clock on Sunday night.

On his arrival, I found him perspiring profusely from every pore (the surface being only naturally warm) pulse 98, soft and regular; and he was perfectly free from all spasmodic action, but, an attempt to remove him from the palankeen, in which he dreaded suffocation from the heat, brought on an immediate return of his sufferings and it was utterly impossible to relieve him without causing an intense aggravation of the spasms.

At 2 A. M. succeeded in getting the occiput shaved, and half an ounce of the liquor lyttæ well rubbed in over that part, the back of the neck, and fauces; he was also able to chew and I believe, to swallow, twenty grains of calomel and five grains Ext. Opii mixed up with crumb of bread. He seemed tranquil for one hour after the exhibition of this medicine, and then expressed a strong desire for tea which I had prepared immediately and with the hope of enabling him to swallow it, gave him a silver tube to suck the fluid through. Having

previously blindfolded him at his own request, he continued to converse with me for nearly two minutes, inhaling the air through the pipe all the time, when, without the possibility of his seeing the fluid, or having any intimation of its proximity, it was cautiously brought towards him, with the intention of immersing the lower end of the tube in it; but when the cup containing the tea approached within a yard of him he uttered a terrific shriek, and fell back on his bed, in one of the most awful paroxysms of spasm I ever witnessed. A repetition of the attempt to bring any fluid near him, produced a similar result, and deeming it cruel to cause a renewal of such agony, all further trial was abandoned.

From this period until 6 A. M. he remained comparatively tranquil, but, at a quarter past six he was seized with a return of the spasms in his throat in an aggravated degree, and his sufferings were dreadful. To add to his unhappy state, any attempt to approach or aid him, seemed to increase his agony, and with very short intermissions, he remained in the state described until 8 o'clock, when he appeared completely exhausted. During an interval of apparent ease, a pint of highly concentrated sheep's head broth with an ounce of Laudanum mixed was thrown up the rectum at 9 A. M. and retained, but afforded no relief: the spasms (now extended to the stomach) returned with tenfold violence, hands and feet became deadly cold, the whole body was covered with a profuse clammy sweat, and pulsation could no longer be felt at either the wrists or temples, and after tossing about in excruciating torture for an hour, with three intervals of ease, only, of a few seconds duration each, he expired at 10 o'clock.

During the entire period of my attendance viz. from half past 11 P. M. on Sunday till 9 A. M. on Monday, the poor sufferer was perfectly rational, and clearly detailed the history of his case, which is briefly as follows :—About six weeks ago he made an attempt to tame a young jungle dog, but the animal having become excited and bitten a tame dog of his own, Mr ————, wished to muzzle the wild animal and while trying to do so, was bitten in two or three places in his left hand; having used the precaution of soaking the parts in hot water, and pencilling the wounds freely with argent. nitrat, he thought no more of the matter, until the tame dog evinced symptoms of madness, although the wild one shewed no sign of disease. From that hour, a dread of rabies preyed more or less on his mind, and in the hope of getting rid of the unpleasant feelings the occurrence had given rise to, he rode into Nuggur from Aurungabad, a distance of 75 miles in one day, to join a hog hunting party then about to start from this place. For two days after his arrival he felt unwell and listless, but persisting in his intention of joining the sport, he proceeded to Serowlee on Saturday, and the same evening felt the approach of his fatal malady, and communicated his fears to Lieut. ————.

6

Case of extensive Tubercular deposition over the convex surface of the Brain, with softening of the left hemisphere, and slight serous effusion into the lateral Ventricles. By J. Murray, Esq.

Presented by the Medical Board.

————, aged two and half years, of fair complexion and light hair, is reported to have had rather delicate health from his birth, but never to have

had head symptoms. During dentition he was affected with a variety of cutaneous diseases: he always slept badly at night: and throughout last monsoon at Bombay, he suffered from abdominal derangement with boils, which reduced him very much in flesh and strength: and in this state he arrived at this station (Malcolm Pait) in October, 1840. In the course of the three following months, he recovered with surprising rapidity; and from having been a pale, sickly looking emaciated child, he acquired a clear florid, healthy complexion, became extremely spirited and active, but inclined to spareness of flesh rather than the reverse.

In this state of health he went out for his evening walk at 5 o'clock on the afternoon of January the 7th 1841. When he returned at 6 o'clock, he complained of a little pain of forehead and in a minute or two fell asleep on a chair. He was awoke, but refused his supper, at half past six he complained of pain in his stomach and soon after vomited. Frequent draughts of tepid water were given to him, and during the two following hours he vomited repeatedly and freely, and discharged his dinner undigested, with which were mixed some scarlet substances resembling the husks of berries; but the vomitted mattter was not kept.

At 9 o'clock, when I first saw him, he lay in a state of stupor for ten or fifteen minutes at a time, then started up screaming and restless for two or three minutes, and again relapsed into the same lethargic state. There was a cold damp moisture on the face and forehead, with pallor and puffiness of the face and eyelids; the soles of the feet were hot, and the rest of the body of natural temperature — tremors of the hands, frequent grinding of the teeth, and occasional vomiting and thirst. The pulse was 130 rather below than above the natural strength, but there was strong action of the heart, respirations 36 and stertorous; pupils alternately dilated and contracted. After having been asked several times if he had any pain, he pointed to his mouth (tepid bath, large dose of calomel, blister to nape of neck) at midnight the pulse had fallen to 65 and intermitted; respirations had risen to 60; there was a tendency to coldness over the body generally, occasional transient flushing of the face, but still accompanied with coldness and clamminess of the cheeks. Alternate dozing and jactitation, with grinding of the teeth; the swelling of face had quite subsided, and the thirst had ceased. He appeared to be sensible, except for a minute or two after waking when he talked incoherently (small doses of Spt. ammon. aromat.)

Towards morning of the 8th, the pulse gradually rose to 120; the skin regained its natural heat, and the screaming and jactitation diminished. In the course of this and the two following days, the pulse fell gradually again to 70 or 75, and intermitted, but was of natural strength; the respirations reduced to 28 or 30, but free from stertor; he continued in a state of somnolence, with the eyes half shut, and a natural appearance of pupils, but awaking with restlessness and tossing of the head. Countenance more natural; he seemed sensible, but did not answer questions, and never spoke, except to ask for water, the thirst being at times rather urgent. On the 9th the skin having become rather warmer than natural, two leeches were applied to the temple, but with rather unfavourable effect: blister to the head, a grain of calomel every three hours, repeated mercurial and other purgatives, and enemas, and cold applications to the forehead when the temperature admitted of it.

On the 11th, the pulse ceased to intermit, and on the 12th he first answered questions, and from that date till the 16th there was a gradual amendment. His principal symptoms were extreme fretfulness, laying with the head thrown back, and screaming when he was turned in bed, frequent winking of the eyes grinding of the teeth, and picking of the nose. His pulse varied from 120 to 130 and he had a good deal of thirst; up to this time, he had scarcely lost flesh and his bowels were easily regulated (purgatives frequent small doses of carbonate of soda which had always an immediate beneficial effect in soothing him, and allaying thirst, &c.)

From the 16th to the 26th (when in consequence of my indisposition, he was attended for some days by my assistant apothecary and afterwards by Dr. Ranclaud) he suffered at some period of each day, but at irregular hours, from febrile heat of skin, quickness of pulse, extreme restlessness, and thirst, and the bowels for the first time became very much disordered. His mouth was at this time affected by mercury. For these symptoms repeated purgatives, salines and a few small doses of quinine were given.

On the 26th when I saw him again, I found that he had emaciated considerably. He had lost the feverishness, but he was extremely fretful. could not bear to be moved, slept indifferently, lay with the head thrown back, had frequent and rapid winking of the eyes, his countenance was pallid and pinched, and he had little or no appetite. His pulse varied from 120 to 130 and the alvine evacuations were extremely dark and adhesive.

From the 26th to the 5th February, he again improved ; his bowels became perfectly regular, and his appetite somewhat increased ; but he continued irritable ; his pulse rather quicker and smaller than natural ; he did not rally in flesh or strength, and he seldom spoke except to ask for drink.

On the morning of the 5th he was observed to be speechless, but moved his arms and head, appeared to be sensible, and swallowed tolerably well. His countenance was not altered. His pulse 120 and weak ; respiration 36 easy. Skin of natural temperature, frequent opening and shutting of the eyes, and occasional grinding of the teeth. Blister to nape, mustard sinapisms to feet, enemas, beef tea and ammonia. &c.

On the 6th at 3 P. M. spoke twice and from half past 8 till 1 P. M. he was in a state of coma, with an almost continued succession of convulsive paroxysms, affecting the muscles of the right eye, right side of mouth, throat, and right arm and hand, with a scarcely perceptible pulse, and a loud mucous rattle in inspiration ; the features were sharpened, but complexion not livid ; the skin retained its natural temperature, and the head was covered with a copious perspiration. During the whole of these four hours and a half he appeared quite moribund. At first he turned round and called out twice or thrice, as if endeavouring to call some one, the convulsions suddenly ceased, and he became quiet and slept occasionally during the afternoon.

7th. Was quiet and sensible and took a good deal of nourishment. On the afternoon and evening of the 8th he had several convulsive twitchings similar to the former ones but slighter and of shorter duration, each subsiding suddenly. About midnight became comatose with slow stertorous breathing. At daylight on the 8th coldness of both feet and of the right arm supervened, and he expired at 5 P. M. without a struggle.

Inspection 14 hours after death. On removing the dura mater, the whole convex surface of both hemispheres of the brain was studded with opaque yellowish white, homogeneous, unorganized, flattened patches of varied form, but principally circular, and varying from the size of a six-pence to that of a half crown piece. They were about an eighth of an inch in thickness in the centre and became gradually thinner towards the border, and were in general largest in size over the spaces between the convolutions. These (tubercular) deposits were externally of a cheesy consistence, internally they were partially softened, the more fluid portion exactly resembling healthy pus, which was mixed with small portions in a state intermediate between a solid and a fluid. The patches were situated between the arachnoid and pia mater, to the former they adhered very closely, from the latter they were easily separable. When separated from their attachment, they appeared to have very slightly compressed the cerebral substance, no granular deposits could be discovered in any part.

The pia mater was minutely injected but there was no deposition of lymph or serum, and not the slightest opacity or thickening of this or the other membranes. A great portion of the medullary substance of the left hemisphere (not involving the corpus, callosum) was considerably softened. Consistence of the right hemisphere natural. About half an ounce of limpid serum in the left ventricle and about two drachms in the right. No morbid appearance in the base of the brain or in the cerebellum.

The stomach was found healthy. Circumstances prevented the further prosecution of the dissection.

Remarks. The sudden accession of vomiting with the discharge of some scarlet substances resembling the husks of berries, followed by stupor, from which the child could be roused to imperfect consciousness, pallor and swelling of the cheeks and eyelids, with coldness and clamminess, first on the face and forehead and subsequently of the body generally, tremors of the hands, apparent uneasiness of the mouth or throat with a slow, weak intermitting pulse, and stertorous breathing; these symptoms occurring without any precursory signs in a child of a clear and florid complexion, but of a spare habit, gave reason to apprehend that he had ate some of the poisonous red berries of the Solanum Giganteum, which grows here in considerable abundance.

The existence of such extensive tubercular deposition on the surface of the brain, as dissection revealed, probably explains the tendency to depression of the vital powers, which marked the commencement and indeed the whole progress of the disease: for even when there was a reaction, it was action without power, as was evidenced by the effect of a small leeching, and still more by the immediate effect of cold lotions in chilling the head when heated.

Whatever opinion may be formed as to the period at which the cerebral softening commenced, there can be little doubt, I think that the tubercular disease was a chronic affection, and was of many months (probably upwards of a year's) duration. Its presence may perhaps account, in some measure, for the general delicacy of constitution, the successive cutaneous affections, &c. with which the child had been affected from birth, though it is difficult to account for the excellent health, which he enjoyed for the two or three months immediately preceding the fatal attack.

What was the proximate cause of this sudden attack? Was it compression of the brain by the tubercles? Had such been the cause, would not the accession have been more gradual? was it not rather the softening of the cerebral substance?

The formation of the tubercular masses seems to have been unaccompanied by any inflammatory action. This appears to be proved, partly by the absence of head symptoms during all the former illness, but principally by the entire absence of any deposition of serum, or lymph in their neighbourhood and of any milkiness, opacity, or other lesion of the arachnoid or pia mater. The minute injection of the latter, without the loss of its transparency, may presumably be dated from the accession of convulsions three days before death.

The large size of the tubercular masses, most of which were in a state of transition from crudity to softness and their free uncombined situation between two healthy membranes (unaffected either by the morbid effusions which usually complicate their formation on the surface of serous membrances or by the complex structure and presence of mucous bronchial secretion which attend their presence in the lungs), afforded an opportunity of observing, without the possibility of mistake, the progress of the softening of the tubercles *from within outwards* a point which has been questioned by some eminent pathologists.

It is worthy of remark that the seat of the convulsions was on the right side. while the cerebral softening was confined to the left hemisphere, though the tubercular deposit extended equally over both hemispheres.

7

Notes on the Climate, &c. of Dadur. By J. Deas, Esq.

Presented by the Medical Board, November 1841.

Having arrived at Dadur on the 30th March last, I can only speak of the climate, &c. from that date, up to the present time; the hot season commenced about the 1st of April, the heat gradually increased till the beginning of May, when it became intensely hot, and continued to increase in intensity up to the end of June. From the 15th of May, to the 5th of June, strong hot winds blew all day and all night, this was followed by an almost equally unbearable, close, and suffocating heat, when a slight change took place for a few days: after this the same suffocating heat which prevailed in June, was again experienced until the 30th of July, when a slight fall of rain brought a little relief during the day. In August the heat was equal to what is felt at the height of the hot season in Hindustan, but having the nights considerably more close and oppressive; from the 15th of May, to the 30th of July, no comparison (so far as my experience goes) can be drawn between the heat of Dadur and that of the hottest place in Hindustan. Mr. Elphimstone says in his history of Cabool that "The heat of Scinde is equal to that of Damaum, and increases as we go towards the south, till it is moderated by breezes from the sea, and that Sebee (which is close to Dadur) is the hottest place in Cabool." As Dadur is so much

farther south than Damaum, and still is not for enough to derive benefit from any breezes from the sea. The heat must be (if Mr. Elphinstone's calculation is correct) beyond the imagination of any one who has not felt the miseries of being exposed to it.

From the 15th of May to the end of June, the Thermometer averaged 125 in the shade during the day, and fell only a very few degrees during the night, and it has been nearly as high as this when there was not a breath of air stirring. Exposure from sunrise to sunset (even among the natives of the place) leading to the most fatal consequences Several cases have come under my immediate care, where men in their usual health, have not been exposed for more than ten minutes to this destructive sun when they fell, as if struck down by a fit of apoplexy and remained in this state, until death closed the scene which it generally did in two hours' space of time, notwithstanding immediate medical assistance being afforded to them. The nights were (if possible) more distressing to the feelings, and destructive to health than the days, sleep being entirely prevented during the first and middle part of them by the feverishness and restlessness caused by the great heat, combined with the withering hot wind which usually sprung up as the sun went down and continued to blow frequently with great force,) until about 4 o'clock in the morning, when the exhausted system, had a couple of hours respite from its tortures in sleep, but even this short repose was not to be calculated upon, as the hot winds did not always cease at this hour, but continued to blow until sunrise. This wind generally blew, from the SW. when no hot wind blew the component gasses of the atmosphere (seemed to the feelings) to have undergone a change in their relative proportions, a feeling as if a great part of the oxygen (the supporter of life) had been withdrawn and the proportion of the carbonic acid increased (in fact resembling very much the feeling a person experiences in descending into an old deserted coal mine, in which there is not a free ventilation) thus rendering the act of respiration, both painful difficult, and imperfect.

The baneful influence of such continued want of rest, combined with the extreme heat of both day and night, was soon apparent in the destruction of the tone of the stomach, and in causing an influx of other evils, which in a very short space of time shook the constitution of even the very strongest to its foundation. The Hospital Returns given in reply to question 2d. showing the number of sick per cent during the months of April, May, June, July, and August, do not according to my opinion, afford a true criterion for guidance in considering the suitableness of the climate of Dadur during the hot season as regards troops, as those returns only show the number received into Hospital labouring under severe and acute, diseases, had all the men been (who from general debility, &c. were unable, efficiently to perform their duties) admitted into Sick Quarters, I am under the mark, when I say that the returns would have shown at least 80 per cent. The proportion of deaths have also been fewer in number than might have been expected, still this speaks little or nothing in favour of the climate, because although its effects have not been the cause of the immediate loss of any very great number of men, it has laid the foundation of diseases which it is to be feared, will before long, deprive the state of the services of many of those who have escaped its immediate fatal effects. The men as a body are at this present moment so debiliated and prone to disease from the long and constant exposure to the great heat, &c.

which they have undergone, that were they brought under any of the usual exciting causes of fever, dysentery, &c. my opinion is, that very few would escape.

I cannot give an opinion as to the suitableness of the climate for Troops during the cold season, but I have no hesitation in stating it to be my professional opinion that Dadur can be occupied during the hot season, only at a fearful sacrifice of life and health.

Reply to Query 2d. viz. sick per cent.

During the	Month of April..	16
Ditto	Ditto of May...	39
Ditto	Ditto of June...	31
Ditto	Ditto of July...	21
Ditto	Ditto of August.	11

Reply to Query 3d. viz. Number of Troops at the Station and number of deaths during the last five months.

Strength of the Head Quarters of the 6th Regt. Native Infantry	643
Ditto Poona Irregular Horse	185
Ditto Golundauze	72

Number of Deaths.

Head Quarters 6th Regiment Native Infantry	11
Poona Irregular Horse	8
Golundauze	1

Reply to Query 4th. The season, &c. showing the last and worst for the Troops.

I am unable to reply to this question as regard the cold season, and I have already in answer to Query 1st stated my opinion as regards the climate during the hot months.

Reply to Query 5th viz. The sort of accomodation the Troops have had, &c.

The greater number of the men were in huts and the remainder in tents, the huts being low and thinly covered, afforded very little better protection from the heat than the tents did. I do not think that the men in the latter, suffered more from disease than those in the former. Had the men been properly housed in, sickness would, in my opinion, have prevailed to a somewhat less extent, nevertheless I am of opinion that with the best possible accomodation the hot season at Dadur would always prove destructive to Troops.

Reply to Query 6th, viz. The particular months during which each station is most unhealthy and the causes.

I am unable to answer these questions.

Reply to Query 7th, viz. The unhealthiness generally of particular places

I am unable to answer this question.

Reply to Query 8th, suggestion as clothing, &c.

The lighter the clothing is during the hot months so much the better.

8

Obscure Case of Phthisis Pulmonalis. By J. D. Campbell, Esq.

Michael Riddin, ætat. 29, embarked for Bombay at Gravesend on the 24th October, 1841. He used to be active and cheerful in barracks at Bromptom, but was noticed to become melancholy and silent when he left the channel. He twice took medicine on board ship for slight headache, which yielded to trifling remedies, and said that except being rather weak, that he was quite well. Was admitted into the sick bay on board the "Donna Pascoa" on the 2d February, 1841 at sea, for diarrhœa which he said was not very troublesome, though he had noticed it forabout six weeks. On examination, I found his chest very much contracted; countenance sallow; dark complexion; and a general heat of skin. He had no cough, no headache, night sweats, griping, or tenesmus. The abdomen was not in the least degree tender on pressure, There was no sickness. The only indications of disease being the diarrhœa, great emaciation, heat of the surface, and pulse 104.

He was ordered rice diet, Hyd. Chlorid. gr. vi. Rhei. Pulv. gr. x. statim Ol. Ricini, ℥i. post horas quatuor.

4th. — The frequency of the calls to stool was diminished by the medicines, but he continued very weak. Decoct. Cinchonæ ℥iss, ter in die.

6th. — On the 6th I found him decidedly improved, though still very weak and I gave him one pint of porter daily.

9th. — He continued well till the 9th, when he complained of griping. Ol. Rici. ℥ss. statim. which produced a light brown fluid motion, not very copious. I now commenced with, alterative doses of calomel as follows. Hyd. Chlorid. gr. i. Pulv. Ipecac. Comp. gi. x. secundis horis. Sago ad. libitum. He continued to emaciate, and on the 11th felt a little uneasiness in the epigastric region, which however was very trifling and yielded immediately to Pulv. Rhei. gr. xv. Cinaomom comp. x. Creta p. p. gr. v. I ordered him fresh meat and Port wine daily.

On the 14th he felt quite well; the pulse came down to 88; the tongue was clean; skin cool; and purging absent.

On the 15th the purging returned, but as before unattended by any pain, sickness or other morbid, symptom. The emaciation increased, I administered, Quin Disulph. gr. i ter die, and he continued in the same state without material alteration till the 25, when I ordered Ferri Sulphat. gr. xii. Mic. panis q. s mft. pilul xii. Sumat 1 ter in die.

On the 28th the purging having increased, I ordered Mist. Cret. Comp. ℥i. quater die.

March 2nd. — The uneasy sensation in the epigastrium having returned, I ordered a mustard cataplasm to be applied, which afforded considerable relief.

As the man was emaciating to a degree which appeared unaccountable, there being, as I before noticed, no apparent symptom of Phthisis or other organic disease, I carefully examined him in company of my friend Mr. T. C. Jervis, the surgeon of the ship, and though we were led to believe in the existence of Phthisis, we detected nothing unusual by the stethoscope. * He had no *cough*,

* N. B. The noise on board the ship necessarily precluded a very satisfactory stethoscopic examination.

difficulty of breathing or night sweats ; no spitting and a total absence of pain of any kind. The purging also was not very urgent, and occasionally while under treatment left him entirely for 24 or 40 hours.

8th. — On the 8th of March he became so debilitated as to be unable to move in his cot without assistance and I gave him, vini rubri ad libitum. Pil. Ferri co. bis die, and omitted other treatment.

10. — On the 10th he rallied a little, and I exhibited, Decoct. Cinchonæ ℥i. ter in die : as the purging continued I also continued Mist. Creta. co. C. Opii. 4ter die.

His motions have continued watery and feculent up to the present time.

On the 15th his countenance became very anxious, I omitted the pills of sulphate of Iron and gave him, Mist. Quinœ. Disulph. ter in die and also Mist. Creta c. Opii post sing. sedes liquidas.

The purging having somewhat increased on the 17th, I ordered him, Pulv. Kino. Comp. gr. x.

He now refused all nourishmsnt, and appeared rapidly sinking. For two days he was constantly supported with wine, brandy and ammonia, and at the same time took, Pulv. Kino. Com. gr. xv. bis die : I also injected a pint and a half of gravy twice a day.

The purging increased and was very troublesome during the night, his aspect had now become very anxious ; the pulse 96, full and strong ; skin hot and dry ; tongue clean and moist ; sordes collected on the lips ; no headache or pain of any kind. I administered Cupri Sulphat gr. iii. Mica panis q. s mft. pil. xii. cujus sumat unam ter in die.

21st. — On the morning of the 21st the pulse was 104 ; thready ; lips and tongue glazed.

Injection of four pints warm water night and morning : during the day he wandered a little and had some few convulsive movements of the hands. The wine was continued and the sulphate of copper with equal part of opium. The purging was arrested for a time. He was purged twice in the night and the motions contained a good deal of pus.

22nd. — On the morning of the 22nd he passed two immense clots of blood by stool. His respiration at 11 A. M. was fifty per minute, and after supporting him with the mist. Vini Gallici, Æther and Ammonia. he expired at a quarter to 2 o'clock P. M. at the instant that the anchor was let go in Point de Galle roads. I made an examination of the body one hour and a half after death in the presence of my friend Mr. Jervis, and we discovered the following morbid appearance.

Necroscopia. — The external appearance of the body was exsanguineous ; extremely emaciated chest ; very narrow ziphoid cartilage, considerably bent inwards, no ecchymoses.

Thorax. — The surface of the lungs was studded with innumerable tuberculous patches. A fistulous excavation was found in the apex of the right lung : both lungs contained enormous quantities of tubercles in a crude state ; throughout the whole of their substance slight adhesions of the pleura were found on the right side, and very old extensive adhesions on the left side.

The heart was unusually small, and there was concentric hypertrophy of the right ventricle ; pericardium natural.

Liver. — This organ was also very small, pale and friable. The peritoneum

was adherent in many places, especially over the liver and pylorus. It also contained *numerous tubercles.*

Spleen. — Natural; pancreas natural; the stomach was much distended with air.

There was very extensive ulceration throughout the *whole* course of the intestinal canal, but more especially in the ileum and colon. There was also a gangrenous patch in the upper part of the descending colon and one in the rectum. Kidneys and bladder natural.

Remark. — This case appears to demonstrate the enormous extent of organic disease, which may exist independent of the patient suffering pain. This man never complained at any time, and the diarrhœa may be said to have been the only prominent symptom.

9

Letter on the treatment of the Aden ulcer from Dr. Pruner, Chief Physician to the Military Hospital and Professor in the Medical College at Cairo, to the Members of the Medical Board in Bombay.

Frequent reports brought up by travellers from the Red Sea with regard to the difficulties experienced at Aden in the treatment of what the Arabs call the *Yemen ulcer*, have engaged me to submit to your attention the result of considerable experience acquired during my abode on the Arabian coast. The only interest I have in presenting you these few lines, is a sincere hope and wish to be enabled to contribute in however small a degree towards the relief of human suffering; and I feel certain that actuated by this principle, my observations will not fail to receive your kind consideration and indulgence.

Without pretending to furnish here a learned treatise upon the causes, advance and nature of the ulcerous disease affecting the troops at Aden, I will only venture to propose to you the use of the blue vitrol (sulphas cupri) as the, most effective means I could discover for checking the progress of the ulcer, and even for healing it in very advanced stages.

A few words will be sufficient to explain the treatment I have adopted for about seven years, and to show upon what principles its success depends. I believe it very essential to stop the progress of the disease in its commencement and it is then chiefly that my method is successful. Whenever a wound breaks out and shows an unclean pulpy, grey, &c. surface, I cover it with a very thin stratum of fine prowdered sulphate of copper, and upon that lay nothing but dry lint; on the following day I find commonly the wound reduced to the state of an ulcus simplex with the healthiest aspect; if not, I repeat the practice a second time; but the sulphate of copper very seldom fails in the first instance. The whole success depends on employing it in the beginning. I never saw any case if taken in time, dispose itself unfavourably, neither in Arabian soldiers nor even in some English sailors and other Europeans whom I had occasion to to treat at Gedda.

Even when the disease was more advanced, as I saw unfortunately in many cases in the Military Hospitals, I found that a mixed local treatment according to my method was still more satisfactory than other proceedings.

The surfaces of these horrible ulcers in advanced stages, always present a more or less unequal state as f. i. large spots red and covered with fine granulations, while other parts are depressed and of a foul aspect. I treat the former portions according to the common principles of helcology and attack the latter with the sulphate of copper in the before mentioned way, which treatment I may add, left me the satisfaction of knowing that I had relieved many perhaps from a certain death.

I feel it unnessary to extend myself more in explanation of the local treatment. One other observation only I beg leave to offer. The evil being rather of a scorbutic than any other description, I believe that every circumstance bearing upon this class of diseases should be fully considered with regard to the regimen and constitutional treatment. But little interior treatment will be requisite if the evil is duly attacked in its beginning. All mercurial treatment seems to me dangerous ; I never saw mercury less supported by patients of any race and kind than on the coasts of the Red Sea ; it promotes and produces there quickly the most deplorable scorbutic decomposition in the human frame.

The above few remarks I offer with deference to so distinguished an arm of my profession as the body of Medical Gentlemen composing your Board with the greatest respect for whom I have, &c.

10.

* *Bombay Branch of the Royal Asiatic Society.*

Resolutions passed by the Bombay Branch of the Royal Asiatic Society.

I. That the present Museum room of the Society be appropriated solely for the purpose of a museum.

II. That a fixed proportion out of the subscriptions of members to the Society be appropriated to the Museum, viz 20 Rupees from Resident and 15 Rupees from Non-resident Members.

III. That a subscription for the first outlay be opened immediately.

Rules adopted for the care of the Museum.

I. That care of the property in the Museum shall be vested in curators elected from the Members of the Society.

II. That the curators shall be responsible for the adoption from time to time of such measures as may seem to them expedient for the preservation and exhibition of the specimens, submitting such to the Society as may involve expence.

III. That the curators shall, at their option, receive and dispose of donations, and shall dispose such sums as the Society may place at their disposal for the illustration of each class of subjects.

* The Committee have much pleasure in making these resolutions of the Bombay Branch of the Royal Asiatic Society, generally known to members of the Medical and Physical Society, with the view of its leading to effective co-operation in the promotion of so very useful an undertaking.

IV. They shall direct correspondence with the individuals or societies for the furtherance of these objects.

V. The curators shall have the power of appointing their own officers and the subordinate servants of the institution, and shall submit yearly a report of what has been done and the estimated expenses of the establishment for the ensuing year, for the sanction of the society.

Rules adopted for making the Museum available to the public.

I. The Museum shall be open for public inspection on Mondays and Thursdays between 10 A. M. and 1 P. M. and 3 P. M. and 6 P. M.

II. No Specimens shall be allowed to be taken out of the cases or handled on these days, and between these hours.

III. The Museum will be available for study on Tuesdays and Fridays of the week at the same times.

IV. Members of the Society will have free access to it at all times when the servants are there.

V. Subscriptions of 5 Rupees a month or 20 Rupees per annum paid in advance, shall give the same free access as to Members of the Society.

VI. The curators shall have power to prohibit the opening of such cases as would derive injury from general inspection, without their sanction.

VII. The curators shall have power to give tickets to such respectable students in any of the public institutions as may desire to study any of the Classes of subjects contained in the Museum.

VIII. That on Saturdays the Museum shall be available for public instruction under the control of the curators who shall have the sole power of deciding to whom and to what extent, this liberty shall be granted, and applications shall be made at least a week before the use of Museum is requested, and must specify the exact time and purposes for which the use of the Museum is solicited.

QUARTERLY PROCEEDINGS

OF THE

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

COMMITTEE OF MANAGEMENT FOR 1841.

President.

J. McADAM, ESQ.

Members.

R. H. KENNEDY, M. D. J. McLENNAN, ESQ.
J. GLEN, ESQ. J. F. HEDDLE, ESQ.

Secretary.

C. MOREHEAD, M. D.

Proceedings from 1st October, to 31st December, 1840.

MEMBERS ELECTED.

Ordinary.

W. Arbuckle, Esq., Assistant Surgeon, Bombay Establishment.
J. F. Morier, Esq.; and G. M. S. Seaward, Esq.; Assistant Surgeons, elected in accordance with Regulation 7.

Communications Presented.

1. Letters from Sir J. McGrigor, Bart. Director General of the Army Medical Department; the Royal College of Surgeons London; the University College London; E. Barlow, M. D.; J. Hope, M. D.; and the Deputy Inspector General of Hospitals at Madras, acknowledging the receipt of the Society's Transactions.

2. A letter from C. R. O. Bloxham, Esq., forwarding a Dissertation on the Ulcer of Yeman, drawn up by M. M. Chedufay, Physician Inspector of the Armies of Arabia.

This Dissertation was accompanied with coloured drawings of the different stages of the ulcer, which is similar to that, from which the Sepoys at Aden, have suffered.

3. A case of dislocation of the lower jaw caused by the act of vomiting; communicated by W. Mackie, Esq.

4. Surgical cases which occured at Balmeer, by A. Campbell, Esq.

5. Register of the Pluviometer at Bombay, from the year 1837 to 1840, presented by G. Noton, Esq.

Proceedings from 1st January, to 31st March, 1841.

MEMBERS ELECTED.

Ordinary.

W. A. R. Nicholson, Esq. Assistant Surgeon, Bombay Establishment.

G. Baines, Esq.; T. B. Larkins, Esq.; S. McMorris, Esq.; H. S. Moore, Esq.; G. J. Shaw, Esq.; E. Impey, Esq.; R. Dent, Esq.; Assistant Surgeons, elected in accordance with Regulation 7.

Communications Presented.

1. A letter from T. Loinsworth, Esq. Deputy Inspector General of Hospitals, enclosing a donations of Rs. 100, for the furtherance of the objects of the Society.

2. A letter from Mr. Richardson, Bookseller, 23 Cornhill, intimating the parties to whom copies of the 2nd Volume of the Society's Transactions had been presented.

3. A letter from J. Murray, Esq. forwarding a specimen of a species of Sivertia, a bitter tonic which grows in considerable abundance on the Mahableshwur Hills.

4. A letter from the Assistant Inspector of Her Majesty's Hospitals at Mauritius, acknowledging the receipt of the 2nd Volume of the Society's Transactions.

5. A letter from W. B. O'Shaughnessy, M. D., Professor of Chemistry in the Medical College of Calcutta, presenting to the Society a copy of his pamphlet on the preparations of the Indian Hemp or Gunjah.

The Society is also indebted to Dr. O'Shaughnessy for a specimen of the Extract of Hemp.

6. Return of the diseases of the heart and aorta in H. M. 2nd or Queen's Royal Regiment, from January 1st 1834, to 31st December 1838, shewing also the diseases with which they have been associated, or under which, they have been masked: — also, a Return shewing the comparative mortality by diseases of the heart and aorta in the same Regiment, during the above period, by R. H. A. Hunter, Esq. Assistant Surgeon H. M. 2nd or Queen's Royal Regiment.

7. The second half yearly report for 1840 of the Oculists department, by M. Stovell, Esq. presented by the Medical Board.

8. Cases of cardiac and aortic disease, by R. H. A. Hunter, Esq. H. M. 2nd or Queen's Royal Regiment.

9. Case of extensive tubercular deposition over the convex surface of the brain, with softening of the left hemisphere and slight serous effusion into the lateral ventricles, by J. Murray, Esq., presented by the Medical Board.

10. Experiments illustrative of the Physiological effects of Calomel on the Gastro-intestinal mucous membrane of Dogs, by J. Murray, Esq.

Proceedings from 1st April, to 30th June, 1841.

MEMBERS ELECTED.

Ordinary.

J. D. Campbell, Esq.; T. Lodwick, Esq.; P. Cruickshank, Esq.; G. H. Dickinson, Esq.; R. D. Peele, Esq.; W. H. Pigou, Esq.; T. W. Ward, Esq.; E. Ellis, Esq.; W. Thom, Esq.; R. R. Smith, Esq.; J. Sproule, Esq.; E. I. P. Pridham, Esq.; and W. Bowie, Esq.; Assistant Surgeons, Bombay Establishment, elected in accordance with Regulation No. 7.

Communications Presented.

1. A letter from I. Dorward, Esq., Assistant Surgeon, Madras Establishment, requesting that his name may be withdrawn from the list of members.

2d. A letter from A. B. Orlebar, Esq, Secretary to the Museum Committee of the Bombay Branch of the Royal Asiatic Society, forwarding the rules of the Museum established by the Asiatic Society.

3. Remarks on Military Hospitals with suggestions relative to a new method of ventilation, by Captain J. H. Ottley, 26th Regiment, N. I., Assistant Civil Engineer, Khandesh, presented by the Medical Board.

4. A letter from J. D. Campbell, Esq, presenting a series of Anatomico-chirurgical plates for the use of the Society.

5. General remarks on the remedial effects of the extract of Gunjah, as observed at the Native General Hospital at Bombay, with two cases of Tetanus treated in that institution, by A. Graham, Esq.

6. An Original Communication from Dr. Pruner, Chief Physician to the Military Hospital at Cairo, in Egypt, relative to the employment of the Sulphate of Copper in the treatment of the Aden Ulcer, presented by the Medical Board.

7. Three cases of Cardiac disease, by R. H. A. Hunter, Esq., Assistant Surgeon, H. M.'s 2d Queen's Royal.

8. Annual reports of the 1st Troop Horse Brigade, for 1838, 39, and 40, by A. H. Leith, Esq., presented by the Medical Board.

9. Annual report of the 15th Regiment, N. I. for 1840, by A. Graham, Esq. presented by the Medical Board

10. Annual report of the 10th Regiment, N. I. for 1840, by C. Black, Esq presented by the Medical Board.

11. Annual report of the European Regiment, stationed at Aden, for 1840, by J. P. Malcolmson, Esq., presented by the Medical Board.

12. Report of the diseases which have occurred in the Hon'ble Company's Steam Flotilla on the rivers of Mesopotamia, from the 1st January 1839, to the

31st December 1839, with a short sketch of the climate and topography, by J. Floyd, Esq., presented by the Medical Board.

Proceedings from 1st July, to 30th September, 1841.

MEMBERS ELECTED.

Corresponding.

Sir G. Ballingall, Professor of Military Surgery, Edinburgh, and Dr. Laidlaw, of Alexandria.

Ordinary.

E. J. Wallace, Esq.; G. F. Forbes, Esq.; D. Milligan, Esq.; J. J. Faithful, Esq.; S. M. Pelly, Esq.; G. M. Ogilvie, Esq.; T. Cannan, Esq; T. A. Boyrenson, Esq.; J. M. Lowry, Esq.; W. L. Cameron, Esq., J. E. Batho, Esq.; W. Collum, Esq.; F Manisty, Esq.; H. Hudson, Esq.; G. Allender, Esq.; Assistant Surgeons Bombay Establishment, elected in accordance with Regulation No. 7.

Communications Presented.

1. Letter from E. Barlow, M. D., and the Secretary to the Medical Society of Madras, acknowledging the receipt of the 3rd volume of the Society's Transactions.

2. A letter from J. D. Campbell, Esq., acknowledging the receipt of the three volumes, of the Society's Transactions.

3. Observations on Dracunculus as it prevailed in the 22nd Regiment N. I. from April till September, 1841, by D. Grierson, Esq., presented by the Medical Board.

LIST OF DONATIONS FOR THE LIBRARY.

By the Editor

Madras Quarterly Journal, 2d Vol.

By the Royal College of Surgeons.

Catalogue of the Library of the Royal College of Surgeons, 1st & 2d Vols.

By the Author.

Memoir on the Fossils of the Eastern portion of the great Basaltic District of India, by J. G. Malcolmson. Esq.

By the Medical Board of Bombay.

Practical Essay on some of the principal Surgical diseases of India, by E. H. Brett, Esq., M. R. C. S. L.

By the Asiatic Society of Bombay.

Journal of the Bombay Branch Royal Asiatic Society. No. I.

LIST OF MEMBERS

OF THE

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY

ORDINARY MEMBERS BOMBAY PRESIDENCY.

The asterisk (*) marks those members who are absent on furlough or sick leave.

Allender, G., Esq., *Assistant Surgeon.*
Arbuckle, W., Esq., *Assistant Surgeon.*
Arnott, A., M. D., *Assistant Surgeon.*
Arnott, F. S., M. D., *Assistant Surgeon.*
Atkinson, J. J., Esq., *Assistant Surgeon.*

Babington, W. T., Esq., *Assistant Surgeon.*
Barrington, W. B., Esq., *Assistant Surgeon.*
Batho, J. E., Esq., *Assistant Surgeon.*
Behan, R. J., Esq., *Assistant Surgeon,*
* Bell, D. C., Esq., *Superintending Surgeon*
Black, C., M. D., *Assistant Surgeon.*
Bloxham, C. R. O., Esq., *Assistant Surgeon.*
* Bourchier, J., M. D., *Assistant Surgeon.*
Bowie, W., Esq., *Assistant Surgeon,*
Boyd, J., Esq., *Surgeon.*
Boyrenson, A., Esq., *Assistant Surgeon.*
Brickwell, J., Esq., *Assistant Surgeon.*
Brown, R., M. D., *Surgeon.*
Burn, A., M. D., *Assistant Surgeon.*
Burnes, J., K. H., M. D., *Surgeon.*

Cahill, F. S., M. D., *Surgeon.*
Cannon, T., Esq., *Assistant Surgeon.*
Cameron, W. C., Esq., *Assistant Surgeon.*
Campbell, A., M. D., *Assistant Surgeon.*
Campbell, J. D., Esq., *Assistant Surgeon.*
Carter, J. H., Esq., *Assistant Surgeon.*
Clark, T., Esq., *Assistant Surgeon.*
Collier, C. F., Esq., *Surgeon.*
Collum, W., Esq., *Assistant Surgeon.*
Craig, J., Esq., *Assistant Surgeon.*
Cramond, J., Esq., *Assistant Surgeon.*
Cruickshank, P., Esq., *Assistant Surgeon.*

Davidson, R. H., Esq., *Assistant Surgeon.*
Dent, R., Esq., *Assistant Surgeon.*
Dickinson, G. H., Esq., *Assistant Surgeon.*
Doig, J., Esq., *Surgeon.*
Don, J., M. D., *Surgeon.*
* Ducat, C., M. D., *Surgeon.*
Duncan, A., Esq., *Surgeon.*

Elliott, W. R., Esq., *Assistant Surgeon.*
Ellis, E., Esq., *Assistant Surgeon.*

Faithful, J. J., Esq., *Assistant Surgeon.*
Fogerty, W. K., Esq., *Surgeon to Bombay.*
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Fraser, J., Esq., *Assistant Surgeon.*
* Frith, R., M. D., *Surgeon.*

* Gibb, H. Esq. *Surgeon.*
Gibson, A., Esq., *Surgeon.*
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Glen, J., Esq., *Superintending Surgeon.*
* Gray, P., Esq., *Assistant Surgeon.*
Graham, A., Esq., *Surgeon.*

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Hathorn, H. P., Esq., *Assistant Surgeon.*
Heddle, J. F., Esq., *Assistant Surgeon.*
Hoskin, R., Esq., *Assistant Surgeon.*
Hudson, Esq., *Assistant Surgeon.*
Hunter, R. H. Esq., *Assistant Surgeon, Hon. M's. 2d.*

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* Inglis, J., M. D., *Surgeon.*
* Johnstone, H., Esq., *Surgeon.*

Kays, M. T., M. D., *Surgeon.*
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Kennedy, R. H., M. D., *Medical Board.*
Kirk, R., Esq., *Assistant Surgeon.*

Larkins, T. B., Esq., *Assistant Surgeon.*
Lowry, J. M., Esq., *Assistant Surgeon.*
Lodwick, T., Esq., *Assistant Surgeon.*
Leith, A. H., Esq., *Assistant Surgeon.*
Lush, C., M. D., *Surgeon.*

Mackie, W., Esq., *Surgeon in Bombay*
Malcolmson, J. P., Esq., *Assistant Surgeon.*
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McAdam, J., Esq., *Medical Board.*
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McKenzie, J., Esq., *Assistant Surgeon.*
* McMorris, J., Esq., *Surgeon.*
McMorris, S., Esq., *Assistant Surgeon.*
Milligan, D., Esq., *Assistant Surgeon.*
Montgomery, A., Esq., *Surgeon.*
Moore, S., Esq., *Assistant Surgeon.*
Morier, J. F., Esq., *Assistant Surgeon.*
Morehead, C., M. D., *Assistant Surgeon.*
Murray, J., Esq., *Assistant Surgeon.*

Neilson, W., Esq., *Assistant Surgeon.*
Nicholson, W. A. R., Esq., *Assistant Surgeon.*

Ogilvie, G. M., Esq., *Assistant Surgeon.*
Owen, R. B., M. D., *Surgeon.*

Patch, J., Esq., *Surgeon.*
Peart, J. H., Esq., *Assistant Surgeon.*
Peele, R. D., Esq., *Assistant Surgeon.*
Pelly, J. M., Esq., *Assistant Surgeon.*
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Ritchie, D., M. D., *Assistant Surgeon.*
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Smith, R. R., Esq., *Assistant Surgeon.*
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Sproule, J., Esq., *Assistaat Surgeon.*
Stewart, J., M. D., *Assistant Surgeon.*

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Taylor, W. B., Esq., *Surgeon.*
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Thom, W., Esq., *Assistant Surgeon.*

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Wallace, E. T., Esq., *Assistant Surgeon.*
Waller, T., Esq., *Assistant Surgeon.*
Watkins, W., Esq., *Assistant Surgeon.*
Ward, T. W., Esq., *Assistant Surgeon.*
* West, A., Esq., *Assistant Surgeon. H. M.'s*
Wight, R., Esq., *Surgeon.*
Winchester, J. W., Esq., *Assistant Surgeon.*
Woosnam, R., Esq., *Assistant Surgeon.*
Wright, A., Esq., *Assistant Surgeon.*

W. B. O'Shaughnessy, Esq., *Professor of Chemistry Medical College Calcutta.*
J. P. Jackson, Esq., *Bengal Establishment.*
H. S. Fleming, Esq., *Surgeon, Madras Establishment.*
W. Middlemas, Esq., *Assistant Surgeon, Madras Establishment.*
A. Anderson, Esq., *Acting Surgeon to H. B. Majesty's Superintendent in China.*
J. G. Malcolmson, Esq. *Formerly Surgeon Madras Esblishment.*

CORRESPONDING MEMBERS.

J. S. Law, Esq., *H. C. S.*
Captain Shortrede, *Superintendent of the Trigonometrical Survey.*
Dr. Prunet, *Chief Pharmacist to the Military Hospital and Professor in the Medical College at Cairo.*
M. M. J. Desjardins, Esq., *Secretary to the Society of Natural History in Mauritius.*
Sir George Ballingall, *Professor of Military Surgery, Edinburgh.*
Dr. Landlaw, *Alexandria.*

TRANSACTIONS

OF THE

MEDICAL AND PHYSICAL SOCIETY

OF

BOMBAY.

FOR THE YEAR M.DCCC.XLII.

BOMBAY:

PRINTED AT THE AMERICAN MISSION PRESS,

BY THOMAS GRAHAM.

1842.

No. V.

PREFACE.

It has been judged expedient to reprint in the appendix the table of contents of all the published numbers of the Transactions of the Society. This course has been adopted with the view of bringing under the notice of members, the several subjects to which attention has been directed,—in order that the re-discussion of topics, already fully considered, may as much as possible be avoided, and that the investigations of subsequent contributors may be guided into fresh channels of inquiry.

It will not probably be disputed, that to give prominence, at stated intervals, to the past proceedings of Societies, is a measure calculated to serve a useful purpose by tending to bring about a permanent movement in advance, and to lessen that liability, to which persons similarly circumstanced are more or less exposed, of unknowingly repeating the acts of those who have gone before them.

If this remark be generally applicable, it is very specially so, of Societies in India, where changes are so frequent and so complete,—that it must be within the observation of even a very limited experience to have witnessed questions and measures which had been discussed and settled, brought forward again after the lapse of a very few years, and treated as if they had then for the first time attracted notice. Though such drawbacks to steady and progressive improvement, are, perhaps it may be admitted, to a certain extent inseparable from the condition of a fluctuating society, — still it is surely not the course of wisdom to yield to the force of these adverse circumstances

without making some attempt to lessen it, by adopting judicious measures of counteraction, — and of such, perhaps the preservation and publication of Reports and Essays, and the occasional bringing them to recollection, — are not the least important.

While the obligations conferred on the Society, by the liberal support of Government and the unceasing and courteous co-operation of the Medical Board, are here gratefully acknowledged, — a hope is at the same time indulged, that the proceedings of the Society will be found to have been not altogether unfruitful, but to have tended to preserve and to diffuse, through the medium of their Transactions, much important information relating to medical and physical science.

It is indeed very probable, that many of these published reports, — such for example as relate to the countries beyond the Indus and to the operations of the Steam Flotilla on the rivers of Mesopotamia, — will in a few years hence, be valued much more highly than at present, and will thus afford a more complete justification of that estimate of the utility of the Society's labours which has been expressed in the preceding paragraph.

Bombay; April, 1843.

MEDICAL AND PHYSICAL SOCIETY

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TRANSACTIONS.

1842.

TRANSACTIONS

OF THE

MEDICAL AND PHYSICAL SOCIETY

OF

BOMBAY.

1842.

Article I.

Report of the Diseases which have occurred in the Honorable Company's Steam Flotilla on the river Euphrates, from the 1st January, to the 31st December 1841, together with an account of the Climate and Medical Topography of the Upper Euphrates. By John C. Floyd, Esq.

Presented by the Medical Board, June 1842.

In the report affixed to the annual return of the diseases which occurred in this Flotilla for the year 1840, I considered it my duty to lay before the Medical Board, a brief account of the Medical Topography of the southern parts of Mesopotamia, as a means whereby to the better understanding of the diseases of the country, as well as to elucidate, what may become at a future period the scene of more extensive military, as well as naval operations; and with the same views, I shall now describe the northern part of Mesopotamia, through which the upper Euphrates flows, and upon which river the Honorable Company's armed Steamers, Nitocris and Nimrod, have been employed during the past year.

Observations on the country and the river Euphrates. — The country to which the following observations refer, extends along the line of the Euphrates from the 33rd to the 37th degree of north latitude, and unlike

the "Delta" to the south, it is for the most part hilly and void of canals, except in the vicinity of Hilla and Bagdad, where these ancient monuments of the industry of the population and flourishing state of the country, still enable its oppressed inhabitants of to day, to draw forth a precarious return of crops from the surrounding barrenness. From Hilla to Birjeck, the most northerly station to which it has as yet been navigated by us, the distance is nearly nine hundred miles. Its course for seven hundred miles or as low as Felugia, is through a pebbly channel, and from the latter to Hilla, it is through the alluvial soil. It preserves the same rapid and serpentine course as it has in the Delta, but is much more rapid above, owing to numerous artificial walls erected in the river for the purposes of irrigation. The average breadth of the river is from three to five hundred yards, having a current in the high season of five knots, and the low two knots, with a depth of water varying from three to ten feet during the latter.

Geological features of the country.—The valley through which the Euphrates flows in the districts now under consideration, varies in breadth from two to five miles, except betwixt Hitt and Anna, a distance of eighty miles, where it closes in, and becomes in many places less than half a mile in breadth. This valley is for the most part composed of the alluvial deposits from the river, and the breccia of chalk and flints brought down, by its strong current during the high season. Through these the river cuts its way, annually changing its course from the formation of bars at the bottom of each reach, which in time become high pebbly banks, and direct the river upon the opposite alluvial ones. These in their turn becoming washed away, are deposited on the next pebbly one, which alternate succession continues as low as Hitt, when breccia ceases, and the river winds on through the alluvium, which latter near Felugia, merges into that of the desert.

The hills which bound this valley are from three to seven hundred feet high, in its upper part; and in its lower, they gradually sink into the Mesopotamian and Syrian deserts. They belong chiefly to the Neptunian class, being composed between Bir and Belis, of chalk and gypsum resting upon a tertiary sandstone; at the latter place ocre and traces of iron are met with; from Jiaber castle to Racca, a stratum of flint breccia to the depth of sixty feet, in many places, is superimposed on the sandstone; lower down to Zenobia, the only Plutonic rocks on the river are seen, they are lava and seem to have flowed across Syria, from the North West; from this to Hitt is all sandstone as above. At the latter

place, beds of marl and crystalline gypsum with mica slate, rest upon the sandstone, in some places the latter appears to have been upheaved very much. It is in this formation that the bitumen and naptha springs, so celebrated in antiquity, shew themselves. The strike of the hills bordering the valley of the Euphrates is chiefly from the N.N.W. except at Zenobia where the volcanic range mentioned above runs North West and South East; they have scarcely any dip. The river running parallel with the hills in primeval times, has cut the latter into a number of immense basins, varying from two to five miles in breadth; these are in many places connected by narrow channels and alternating form the valley of the upper Euphrates. The action of the river may be traced for a hundred feet above its present level, thereby demonstrating the corroding power of its stream, since the time when the waters first began to depart off the face of the earth. It is strange that as yet, we have not been able to discover any fossil remains in these formations.

Stations of the Steamers. *Musseib.*—Our first station after passing Hilla is at the town of Musseib, a place second in importance to Hilla, and of considerable traffic with the districts higher up the river. It contains about 5,000 inhabitants, chiefly Arabs, like those of Hilla. It may be considered healthy, though there is reason to believe, that its vicinity to the marshy districts of Babylon may bring it within the range of miasmatic fevers. From Musseib to Felugia the alluvial banks are low and liable to be inundated during the periodical rise of the river.

Felugia. — Is in the same latitude as Bagdad, being 34 miles west of the latter place, it is only the site of a large khan and ferry, being on the direct line to Bagdad, over a level country; here I proposed to establish an hospital in the event of the Euphrates being permanently opened for navigation, as the short distance between the two rivers would always render the Medical officer of the expedition available to both Flotillas. From Felugia to Hitt the distance is eighty miles, the country begins to rise, the banks are higher and well cultivated, chiefly by the Deleem Arabs. In this district on the left bank, are recognized the remains of the once royal cities of Perisabour and Ambar, also the supposed site of the battle of Cunaxa, from which may be dated the commencement of the misfortunes which afterwards befel the 10,000 Greeks, and caused them to undertake a retreat so honorable to themselves, by reason of the numerous difficulties under which it was accomplished.

Hitt.—Hitt, the Iss of Scripture and Izanedpolis of the Greeks, is eigh-

ty miles higher up the river than Felugia. It is situated upon the right bank on an isolated rock of limestone which has been scarped all round and rendered capable of defence ; the houses terrace one above the other, which renders the place very conspicuous from a distance. The town is mean in the extreme, it boasts only of one minaret and has no bazar of importance. It contains about 3,000 inhabitants, chiefly Arabs of the Aghail tribe, the descendants of the Saracenic conqueror of Spain ; besides a remnant of that most interesting tribe of Jews, the sons of Jehonadab spoken of in holy writ, and discovered by Wolf near Mecca. The people of Hitt have a sickly appearance, their faces being of a dark and chlorotic hue ; this I attribute to the impregnation of their atmosphere with sulphurated Hydrogen from the bitumen springs, in the immediate neighbourhood of the town; as this gas is well known to be very injurious to animal life. In other respects this place may be considered healthy.

The district round Hitt, is a barren rocky waste, affording no supplies, except sheep and wheat, which latter is produced on the alluvial banks of the river. The trade of Hitt consists in the exportation of gypsum to Bagdad and Hilla for the purpose of building, also oil and salt, and in the making of bitumen boats and corrales, which are used extensively upon both these rivers and are of the same description as those mentioned by Herodotus. The springs from which this bitumen is obtained, are celebrated as having been visited by Alexander the Great, and the Emperor Trajan. They afford an exhaustless supply, and therefore it is very cheap ; when mixed with coal dust or such refuse, it affords a valuable fuel to steamers, and as such it is worthy the attention of the Superintendent of the Indian Navy, as it might be exported to the Persian Gulf and Bombay, at a very cheap rate, and it would prove an economical way of consuming the many thousand tons of coal dust which must otherwise be lost. To the people of Hitt, bitumen is every thing; their drinking vessels, terraces, streets and canaux for irrigation are covered with it, and it affords fire and candles to them during the winter. The temperature of the spring in the heat of summer was 92° Fahr. and water running from it is drawn off and evaporated, by which means a great quantity of common salt is obtained, which is not however very pure, owing to its containing some nitrates or sulphates.

River between Hitt and Anna.—From Hitt to Anna the distance by the river is twelve miles, which is here much more rapid in consequence of the hills closing in, and numerous stone dikes extending half way across the river on each side, for the purpose of directing the force of the stream to

the large mills at their ends ; by which means the water has been raised from time immemorial for irrigating the land, but erroneously mistaken by Alexander the Great, as means of defence against his irresistible legions, thereby confounding them with similar structures thrown across the Tigris by the Persians. The alluvium is not so extensive in the district for cultivation and there is little jungle.

Islands.—Several picturesque little islands almost at equal distances, divide the stream between Hitt and Anna; three of these, Juba, Aloose, and Haditha, contain each about 500 inhabitants under the government of a Sheik, and afford the usual Arab supplies. Upon these islands are still found the remains of ancient Roman fortifications.

Anna is pleasantly situated on the right bank of the river, at the foot of the high hills which here bound the valley. The town extends for more than two miles along a narrow stripe of alluvial soil, which is here lined with a belt of fine date trees. Its Arab inhabitants are composed of the Aghail tribe, like those of Hitt, and number about 4,000, amongst whom are a few Jews but no Christians. The town has no bazars of importance, but its gardens are well supplied with fruit and vegetables ; it suffered very much during the great inundation of the river in 1831, after which came the plague and completed the depopulation of the place. Anna, though only four days journey to the north of Bagdad, possesses a much cooler climate. The heats of summer are, however, still great and sufficient to bring to maturity the fruit of the date-palm, and this place may be considered as the most northerly latitude of that invaluable tree. It is without doubt a very healthy place and well adapted for a station. Opposite to this town are several small islands also inhabited. After leaving Anna, on rounding the angle of the hills, which the river forms in coming from the north, there is another island and town called Rowa, embosomed in rich gardens, and subject to the Sheik of Anna. This may be considered as the limit to the territory as well as the power of the Pacha of Bagdad, for the Arabs to the north as far as Racca, though nominally under the Pachas of Aleppo, Orfa and Bagdad, do not in fact acknowledge either, living as they do in that happy independence which has characterized them since the times of their Patriarchal ancestors.

River betwixt Anna and Deir.—From Anna to Deir the next station, two hundred and forty miles, there is little worthy of remark ; the valley and consequently the alluvium become broader, varying from three to ten miles, with deep and extensive Tamarisk jungles. Throughout this fine

district all is desolation, there being no shadow of life or commerce, beyond the five Arab villages ; which here and there obtrude themselves upon the banks, and we behold with admiration mingled with regret, the vestiges of the Scripture cities of Erzi and Rahabah, besides the Corsote of Zenophon and the Circessium of Diocletian, the latter situated at the embouchure of the "Chabour," a tributary of the Euphrates, which rises in the mountains of Sinjar.

El Deir is a town situated upon the margin of the sandstone hills on the right bank of the river ; it has a mean appearance and contains about 2,500 Arabs, of Jewish extraction. It is governed by two Sheiks, who share between them the profits as well as the animosities of their separate people. The vicinity of Deir is well cultivated, and the town affords the usual Arab supplies. The oil made from the simsim, and ghee appear to be the only articles of exportation ; being on the great caravan routes from Damascus and Aleppo to Bagdad, it has a considerable transit trade. This is a very healthy place and well adapted for a depot being only five days from Aleppo, and six from Damascus.

River betwixt Deir and Jiaber castle.—From Deir to Jiaber castle it is one hundred and eighty miles by the river; the country is more elevated and interesting, the banks of the river being lined in many places with forests of mulberry and poplar, in addition to the everlasting tamarisk : cultivation is also more extensive, as we proceed northward, the great tribes of the Subka, Ahfadthly and Welder having settled down for the purpose of agriculture, like those on the lower part of the river. The ancient fortresses of Haliby and Telibee (probably founded by the Palmyrean Queen) defending a narrow pass of the river, and Racca, once the summer residence of the Caliphs, and at an earlier period, the site of Nicephorium founded by Alexander the Great, are amongst the most interesting places upon this part of the river.

Jiaber Castle on the left bank of the river in latitude 35° 54′ north, has been a station of the Steamers during the greater part of last summer. It is of Saracenic construction and situated upon an isolated hill of sandstone and gypsum nearly three hundred feet above the level of the river, which flows in a rich and beautiful plain, beneath its time worn ramparts. The ruins are of considerable extent but deserted; they contain a great number of serdaubs and vaults, which would prove invaluable to an army in this part of the country ; it could be rendered easy of defence against the Arabs, but from the hills which command it in the distance, it could not

long resist the effects of artillery. The valley at Jiaber is about two miles broad, and is bounded on the opposite side of the river, by a bluff range of sandstone and gypsum hills, which we have named point Hobhouse, on account of the support given to this expedition by the late President of the Board of Control.

River betwixt Jiaber and Belis.—As this point is on the direct road to Aleppo about seventy-six miles off, it has been proposed as our most northerly station; by which the great serpentine course of the river to Belis, the nearest point to Aleppo will be avoided. In a medical point of view it is of no importance as both places are equally healthy.

From Jiaber to Belis is fifty miles by the winding of the river, which here has its course nearly west, and sixteen in a direct line; the banks are well cultivated by the Welder Arabs.

Meschina or Belis.—Meschina erroneously said to be the site of the park and palace of Baulas, consists of three fine Saracenic ruins on a low range of hills, which form the northern boundary of a verdant plain, rich with the varying floras of spring and autumn. This place is in lat. 55° 59′ north and is the nearest point of the river to Aleppo, which is about fifty-five miles nearly west of it, over a very level and hard road, well supplied with water and villages, after the first twenty-five miles are passed.

River betwixt Belis and Birjeck.—From Belis to Birjeck the distance is one hundred and five miles; the surrounding country presents the monotonous and deserted appearance which it does to the south, being always liable to the plundering excursions of the Bedouin Arabs. Belis may be also considered as the most northerly limit of the agricultural Arabs, as well as the most southerly limit of the pastoral Turcomans, who come down so far to feed their flocks in the rich plains bordering the river.

Birjeck.—Birjeck in latitude 27° north is a mean Turkish town, situated on the face of the hills on the left bank of the river, and fortified after the Saracenic style, though its ancient citadel is of Roman construction and fast tottering to ruin. It contains 6,000 inhabitants, chiefly Turks; its bazars are few and far from being well supplied, considering its favourable situation as being upon the great caravan roads from Aleppo, Antab, Diarbekir, Orfa and Mosal, with all of which places it has a considerable transit trade. Birjeck was the place selected for the erection of the steamers of the first Euphrates expedition, and from which place they commenced the descent of this great river. It was not considered healthy at that time as

they lost many of their crews from fever while there, but that mortality with more truth might be attributed to their operations carried on in the marshy plains of Antioch, where they first became ill, and also to the privations and hardships which they had afterwards to undergo in prosecuting the arduous undertaking of transporting the machinery thither. The climate of Birjeck, like all the northern parts of these rivers, comprises the extremes of heat and cold, the frost of winter continuing nearly three months and followed by heavy rains. We see nothing in all this to render the place unhealthy, on the contrary we believe it to be salubrious and admirably adapted for a depot and commercial intercourse. Birjeck is distant one thousand one hundred miles from the Persian Gulf by river navigation, ninety miles from Aleppo by an excellent road, and one hundred and eighty-seven miles from Iskanderoon, the nearest part of the Mediterranean, the latter part of this road being very hilly.

The regions which we have now surveyed lying along the banks of the upper Euphrates, have been celebrated from the most remote ages, from the time when Babel's proud tower sought the skies, until the destruction of the Caliphate by the inundating hordes of Tartars under Hulicu; during which, the rich capitals of Nineveh, Babylon, Selucia and Ctesiphon rose in succession to aggrandize themselves out of the ruins of its predecessor, and finally by their growing wealth and power becoming objects of ambition to Greece and Rome, they often drew together the well disciplined legions of the West to contend on the plains of Mesopotamia for the empire of the East. But, that which most commands our attention, as well as our admiration, are the military expeditions of Cyrus the younger and the emperor Julian along the left bank of this river as recorded by their respective historians, Zenophon and Ammianus Marcellinus. These, we regret, that the nature of this report, will not allow us to do more than notice; we can however add our unqualified belief in the Geographical and other facts therein contained, and we may mention that in case of any army from the North invading this country at the present day, we believe that they would have to follow not only in the very steps of their Greek and Roman predecessors, but would have also to take the same precautionary measures to secure supplies and keep up the discipline of their troops; otherwise the attempt would prove futile in a country impoverished as this has been, by the sword, and overrun by so many plundering troops of Arabs, who if they could not conquer, would always harass an army as of old, and be ever ready to cut off its detached parties.

Surrounding Country.—The surrounding country composes the Sy-

rian and Mesopotamian deserts, which may be said to be destitute of animal and vegetable life, the latter more through the neglect of man than nature, for the subsoil is good, and the rock a cretaceous sandstone yields abundance of water when bored into. The only villages are those on the great caravan route from Aleppo to Palmyra and Damascus; again on the Mesopotamian side, there is not a village betwixt the rivers for hundreds of miles, if we except those to the north of the Chabour river, on the roads to Orfa, Sinjar and Mosul. The description of this desert by Zenophon, now more than two thousand two hundred years back, proves so well the faithfulness of his narrative, and the accuracy of his observations, that we cannot do better than transcribe it in his own words. "The country (he says) was a plain throughout, even as a sea and full of wormwood, and if any other kind of shrubs or reeds grow there, they had all an aromatic smell, but no trees could be seen; bustards, ostriches, antelopes and wild asses, appeared to be the only inhabitants of the desert, and the fatigues of the march were alleviated by those of the chase." And if we add to these the animals which are met with along the banks of the river, as the stag, boar, the Asiatic varieties of the feline and canine class, and a few of the rodentia, besides many of the aquatic birds of Europe, a very general idea of the zoology of the country may be formed.

Soil.—In the valley of the Euphrates as I have stated above, the soil consists of a deep alluvial stratum which contains a great quantity of silicious particles and is of the same plastic nature as that of the Delta; the hills along the river are quite bare of soil and consequently void of vegetation; in the desert, however, the rock being of a soft and porous nature is covered with a sufficient quantity of debris for the purposes of cultivation, and where the resources of art have been brought to the assistance of nature in raising water, as in that part of the desert between Aleppo and the river, the whole might be turned into a fruitful field. Indeed it is only in this way, that we can account for the immense population which in former times existed in this country, as is evidenced by the crumbling temples and ruined towns which every where dot the face of the Syrian desert.

Vegetation. — The vegetation on the banks of the upper Euphrates is exceedingly scanty, which circumstance may be attributed to the banks of the river being high, and the neglect of all means of irrigation; as otherwise the soil and the climate are favourable to the production of all those plants peculiar to the temperate transition zone, which this country is in. Immense jungles of tamarisk, willow and glycirrhiza line the banks, as in the lower parts of the river; a few species of the compositæ

cruciferæ, umbelliferæ, ranunculaceæ, malvaceæ, and convolvolaceæ compose its flora. To these we may add the capparis spinosa, poterium spinosum, mesambryantherum crystallinum, and cucurbitous plants; besides several species of salicorniæ and mimosæ, all of which are cropped by the camel, that pattern of humble and patient endurance. Anemones in great variety cover the desert in spring as with a carpet, and the varied class of the labiatæ impregnate the air with their odours, as the season advances. The vegetable productions cultivated by the Arabs are, wheat, barley, durra (the holcus sorgum of Linneus) which rivals that of Egypt, sesamum orientale, from which they procure their oil, besides cotton, and rice. The date, grape, orange, lemon, mulberry, fig, pomegranate, zujub, (zizyphus lotus) melons and cucumbers, grow to the greatest perfection, and as we proceed northwards towards Birjeck, the apple, cherry, peach, plum and apricot rival those of Europe; to which we may also add most of the culinary vegetables of that country. In conclusion, we may remark, that what Malte Brun said of the state of Syria and its productions, may with equal justice be extended to the banks of the Euphrates. "That if the advantages of nature were duly seconded by the efforts of human skill, we might in the space of twenty leagues bring together in Syria, all the vegetable productions of the most distant countries;" a combination of circumstances which can rarely be found in the most favoured lands, and shews how indulgent nature has been, did not man mar all with an impious hand.

Climate.—The observations which we made in our last year's report respecting the climate of the southern part of these rivers, may with propriety be extended as far north as Anna, for there is no very sensible alteration until we arrive near that place; but there the difference becomes very apparent, the spring being cooler and more prolonged, the great heat of summer diminishing by twenty per cent as compared with Bagdad, and the winter extending over a period of three months, during which there is hard frost. The seasons we consider to be in every respect a month later than those to the south, and the temperature twenty per cent less; some idea of the summer heats being less oppressive than Bagdad, may be formed from the fact, that we never had occasion to live or sleep out of our cabins, the contrary being absolutely necessary at the former place. The hot season however is not so healthy on account of the great diurnal range of temperature, which causes heavy dews to descend and exposure to these was generally found to be followed by fever. The prevailing winds are the same as those met with in the lower part of the rivers, viz. the North-west and South-

east; the latter prevail more frequently during the spring and autumn, and are accompanied often times with lightning and an oppressive state of the atmosphere, during which, headache, diarrhœa, and attacks of ague, if the patient has been subject to this fever, are very common. The baneful effects of this wind in the latitudes of the Mediterranean, have been long known to the ancients. Celsus and many others speak of it, and Horace in the Ode to his friend Postumus thus mentions it,

> " Frustra per Autumnos nocentem
> Corporibus metuemus Austrum"

I myself have paid particular attention to this subject, and I am convinced, that the effects upon the human system which attend this wind are not the result of atmospheric changes, for if any thing, the temperature is then more equal, but owing rather to electrical changes in the atmosphere which re-act upon the blood. This is a point of the most absorbing interest, and worthy the attention of those who have opportunities for more extended observations, as by it much light may be thrown upon the pathology of fevers and cholera: —analogous to these effects are those produced by the hot winds, and sand squalls which prevail on the upper part of these rivers. It will be remembered that it was during one of these squalls, H. M. Steamer Tigris was lost on this river, and in reference to this deplorable catastrophe as well as in its relation to the diseases mentioned above, I trust I shall be excused for inserting the following extract from my Journal. " These squalls for the most part come from the North-west and North-east, they prevail oftener about sunset than any other time of the day, and are not unusually attended with lightning; the body of sand moving in a pyramidal column with its base upon the ground, is carried round to the right in a spiral form sucking up as it were the sand below it. As they mostly come from the North, or the hills and valleys neighbouring the Euphrates, they appear to be owing to a cold current of air rushing into the more rarified strata, when, owing to the disengagement of caloric, electricity is likely generated, and the finer particles of sand being drawn up attract and repel each other in turn, moving in a corkscrew direction from right to left, while they are directed along by the impetus of the current, the vis a tergo, until it moderates, or its base comes in contact with a hill or jungle thereby breaking up the column; on the equilibrium being established between the particles of sand and air, they cease to repel each other any longer." These squalls are not unfrequently accompanied with large nimbi, which obscure the horizon, and portend not a little the destruction which is coming. The

symbolic language of Scripture gives a good idea of its power, when it says, "they shall be chased as the chaff before the wind and a rolling thing before the whirlwind;" and again "your destruction cometh as a whirlwind." Its impetuosity is no less great than the stillness which succeeds it, is sudden. These squalls occur from May to September; they can never prove an obstacle to the navigation of this river, as the accident which occurred to the Tigris was owing, chiefly, to her peculiar construction and being at the time top heavy.

Rains. — The quantity of rain which falls upon the upper Euphrates is sometimes very considerable, being found sufficient for the irrigation of the spring crops; it is however often precarious, and this year there was scarcely any, in consequence of which the vernal crops failed, the desert did not assume its wonted verdure, and the Arabs were put to great straits for herbage for their cattle; the autumnal rains were also deficient and the river did not rise as usual during the winter.

The thermometrical observations made by us at or near Jiaber castle, which is in north latitude 35° 54′ give the following as the result of the diurnal range of temperature.

Thermometer table shewing the average maximum, minimum and medium of temperature, as registered from the Thermometer kept in the H. C. armed Steamer "Nimrod" upon the upper Euphrates, from May 1841 to February, 1842.

Place of observation.	Month of the year.	Thermometer.			Wind and Weather.
		Maximum.	Minimum	Medium.	
Between Anna and Jiaber	May	81	65	76	22 days N.W. to E. 5 days S.W. 4 days calms and 2 days rainy.
Jiaber and Belis . . .	June	89	67	80	25 days N.W. and W. 2 days S. W. 2 days calm and one day rain. Sand squalls frequent.
Ditto.	July	92	74	85	27 days N.W. 3 days S.E. and 1 W. S. W. Fine clear weather.
Ditto.	August	95	74	87	25 N.W. and 6 S.W. Hot and sultry weather with occasional sand squalls.
Ditto.	September.	85	64	77	26 days N.W. and 4 days S.E. variable, with cloudy weather, lightning with meteors.
Ditto.	October.	83	59	69	18 days N.W. 13 days S.W. and variable, day time clear and cool.
Below Jiaber . . .	November A. . . .	67	49	52	S.E. variable with foggy weather and slight rain, S.E. prevailing.
Haradaw Ford . . .	December*	59	31	48	N.E. and S.E. variable with hard frost and fine clear weather
Ditto.	January . .*	48	29	46	N.E. and S.E. with some heavy rain towards the end of the month.
Racca	February*	57	37	45	N. E. Prevailing with occasional light showers of rain.

A. Often from 28° to 38° on deck at sunrise.

* During these three months the Thermometer ranges at sunrise from 17° to 31°.

Population. — We have already spoken of the population of the towns, and the few observations which we made last year respecting the same class, refer with equal force to those on this river. The agricultural Arabs along the banks of the upper Euphrates are composed of the following great tribes.

1 Deleem.	6 Subkha.
2 Agadaut.	7 Afadthly.
3 Jabour.	8 Welder.
4 Aboo Mahomed.	9 Beniseed.
5 Buggarah.	10 Mowally and Hadideen.

The two latter tribes are pastoral, and form part of the irregular troops of the Pacha of Aleppo and Orfa, but the other tribes pay a very doubtful allegiance to the Turkish Government, and not unfrequently take part with the great nomade tribes of Anezay and Shummar, to plunder the caravans, and set the Government at defiance. In stature and constitution they seem superior to the southern Arabs, and they bear the extremes of heat and cold in a wonderful degree, the latter being often rendered more severe through their want of clothing and a scanty allowance of food.

Prevailing Diseases. — The diseases which we had occasion to notice last year as prevailing amongst the natives on the southern part of the river, extend themselves to the north, with the exception of intermittent, remittent fevers, and dysentery; these scourges of almost every eastern climate are seldom met with on the upper Euphrates, which may be attributed to the absence of marshes, and the dryness of the soil. The other diseases of which we spoke, such as scrofula, opthalmia, rheumatism, and cutaneous diseases, are rather the result of poverty and filth, than the prejudicial effect of the climate.

Acute inflammatory diseases, are not to be expected amongst a people of such temperate habits as the Arabs, but chronic affections of the mucous linings of the thoracic and abdominal viscera are very common at the vernal and autumnal changes.

Syphilis is seldom or never met with, but of late it has become rather common, owing to the women of the late Egyptian army spreading over the country, after Ibrahim Pacha had evacuated Syria. Endemic and contagious diseases, such as small pox and measles, are very rare; but the plague in 1830 depopulated most of the villages from Aleppo to Bussora.

Health of the European Crew, and Native Christians. — The num-

ber of cases included in the annexed annual return, amounts to 177 which is nearly double that of our crews, but we may here observe that this includes all the re-admissions as well as fresh cases. From June to October, the Steamers remained almost stationary at or near Jiaber Castle, the most convenient place to Aleppo; during which time though not exposed to the sun or water, the crews were attacked more or less with a slight inflammatory fever which I shall describe hereafter. In October we began to descend the river and complete its survey, this led to some exposure on the part of the men, and consequently to a corresponding increase of sickness, which assumed a type in character with the cold damp weather, being mostly slight cases of common continued fever, rheumatism, and affections of the mucous membranes; and if we take into consideration the arduous and enterprizing undertaking in which they were employed, viz. the ascent and descent of this great river for a distance of more than one thousand miles from the Persian Gulf, during which they were often exposed to the effect of a vertical sun while working in the water, it must be apparent, that they enjoyed a very fair immunity from disease, especially as not one case has terminated fatally, a circumstance of rare occurrence in countries under similar parallels of latitude, and which is a good proof of the salubrity of the climate. The relative proportion of sickness occurring amongst the native portion of the crews, almost all of them being natives of this country, as compared with that of the Europeans, is as one to four, which shews the benefits resulting from climatization; for these natives being Christians have the same allowance of diet and grog as the Europeans, and are in all other respects on a similar footing. We shall now make a few remarks upon some of the diseases included in the return, the classification of which is far from being convenient, but I adopt it, being unwilling to depart from what I understand is the form prescribed by the Medical Board.

Continued Fever. — The cases of continued fever included in the return' prevailed chiefly in the commencement of the cold weather; they were attended with very little excitement of the system, and soon yielded on the secretions being restored to their natural state.

Remittent Fever. — These occurred at or near Felugia on the lower part of the river; they were not attended with such violent biliary symptoms as those of Bussora, the cephalic however were more urgent; they required active depletion and mercurial purgatives under which they soon subsided.

Intermittent Fever. — We have already said that miasmatic fevers do

not prevail on the upper Euphrates, owing to the dryness of the soil, and climate; therefore the cases of this fever were for the most part relapses in those men who had got that fever the preceding year at Bussora or in the Persian Gulf.

Inflammatory Fevers. — These it will be seen form the largest and most serious class of diseases which have occurred amongst us. They prevailed chiefly in the months of June and September when the diurnal range of temperature was greatest, averaging upon the deck a range of thirty degrees, with cold raw mornings, occasioned by the bleak north-west, and easterly winds. On our first arrival at Jiaber Castle in June, it was most prevalent amongst us attacking almost every one; strong north-westers blew in the mornings and evenings, attended with lightning and clouds of sand, while the thermometer ranged from 58° to 90° Faht. We believe the checked perspiration occasioned by the above atmospheric vicissitudes to be the chief exciting cause of the fever, for our crew at this time were neither exposed to the direct effects of the sun or water, as the vessels were then stationary; at the same time we must not discard the highly electric state of the atmosphere and the periodic changes of the moon, which would appear to have an indirect effect upon the sanguiferous system and thereby predisposing to fever, as it was mostly present when either one or other of the above states prevailed.

This fever comes on suddenly, and the patient does not generally feel indisposed until the day preceding the attack, he then usually feels languid, and sore all over, as if he had got a severe cold; after this, his back, loins, and extremities become very painful, so much so, that he can scarcely bear to lie in bed. This is succeeded by severe headache, chiefly referred to the forehead, and vertex, the eyes are suffused, the face flushed and the expression wild, the skin is very hot, urine red and scanty, thirst urgent, tongue loaded and white, bowels mostly confined, or else rather loose, with pitchy secretions, the pulse varies from 98 to 115 full and bounding; to which may be added great restlessness and anxiety on the part of the patient. This state of excitement may be arrested in twenty-four hours, by active antiphlogistic treatment; we did not allow it to proceed further, knowing that delirium would be the result, and a fatal termination, as happens from this fever along the shores of the Mediterranean. The above is the most aggravated form of this fever, which appears to resemble very much the Febris ardens of authors, only, as I have stated above, it has not been produced by exposure to the sun's rays; the generality of our cases were of a milder description, being characterized merely by the muscular pains of

the back and extremities, followed by slight pyrexia and dark fetid motions.

Treatment. — The treatment adopted in the first and severest form, was active depletion followed by antimonial diaphoretic and mercurial purgatives. In the milder form as it occurred in most of our natives, an emetic in the first instance, followed by calomel and Dover's powder, and a mild purgative the ensuing morning, were sufficient to arrest the fever and improve the intestinal secretions. Convalescence is rather quick, though the patient for some time after complains of giddiness and debility. The characteristics of this fever, are the severe cephalic and lumbar pains, followed by a hot skin, a full and bounding pulse, and dark pitchy motions. That it is purely inflammatory, we conclude from its rapid course, and quick termination, being unattended with remissions and yielding to the lancet without ptyalism; the blood drawn being usually very dark, much cupped and buffy. While examining the Topography of the north of Syria, I found that this fever prevails from the river to the Mediterranean; the cases* No. 1 and 2 appended to this report, will illustrate the severe form as it occurred in the steamers, while the case No. 3 will show it, as it is met with in Aleppo.

Diarrhœa.—Eleven cases of diarrhœa are returned; they were all of the most mild description, and as I have remarked before, they appear to have some remote connexion with the state of the atmosphere, for they invariably occur during the prevalence of a southerly wind, or the sand squalls, and lightning; and although few are actually returned, yet it is not unusual for most of the crew under such circumstances to complain of griping pains and pitchy motions, and that without any error in diet.

Chronic Gastro-Enterite. — The case included under the head of Dysentery is more properly Chronic Gastro-Enterite; it occurred in Gunner Wm. Brewer of the 2d Battalion, Bombay Artillery; this disease had its origin in Belgaum and re-appeared upon his getting Bussora fever last year. He has been subjected to almost every treatment in succession without any permanent advantage; small doses of mercury and Dover's powder with leeches, blisters and hot baths, were first tried; then mild astringents, with emollient enemata, extract of gentian and ipecacuanha, preparations of iron and nitrate of silver, all these have alike failed; cupping him every three weeks and the administration of Dover's powder and anodyne enema-

* The cases are not inserted.—C. M.

ta, have afforded most relief. The natural consequence of both the disease and treatment has been to debilitate him very much, but as he has been improving since the cold weather set in, we trust that the sea voyage on his way to the Presidency will tend to re-establish his health.

Hepatic Affections. — Two of these are re-admissions, and the other three happened to men who had been ill before with the same disease in Bombay.

Thoracic Affections.—These comprise one case of pneumonia, one of bronchitis, and one of diseased heart (hypertrophy). The latter is that of an artillery-man, who has been under treatment for the last eight months without benefit, and will require to be sent down to be invalided.

Abdominal Affections.—These are for the most part cases of dyspepsia, and as the greater number of these occurred during the hot weather, I am inclined to attribute them to the difficult supply, and often times entire want, of vegetable food. This would also account for many of our men being affected with worms, chiefly lumbrici. There is also another cause of dyspeptic complaints and even fever during the hot weather, which I consider it my duty to bring to the notice of the Medical Board, namely the issuing of the half dram of grog to the crews, at noon, before dinner instead of after it. Its injurious effects are so apparent to every one who has been in a ship, that I need not make any further remarks ; suffice it to say, that if the health of our sailors was consulted they ought not to be allowed grog before 4 P. M. during the hot weather, and even then they should only be supplied with half the present allowance.

Rheumatism.— The cases of Rheumatism were so slight as scarcely to deserve the name.

Testicle disease of. — Only two cases of diseased testicle; one is hernia humoralis and the other is chronic enlargement, the latter proved very obstinate and required a long course of alterative medicine, besides frequent cupping and blistering over the sacrum. It returned three different times from the patient being exposed to wet.

Other Diseases. — These are for the most part anomalous affections, occurring in those who are anxious to skulk in Hospital; three cases of otitis are included amongst these, inflammation of the aural passages would appear to be rather common in the hot weather, owing to the cold north winds which blow towards the morning.

Surgical Diseases.— None of any consequence except one severe contusion of the upper arm, caused by machinery and followed by extensive sloughing.

Concluding Remarks.— In the foregoing remarks upon the climate and diseases of this country, I have endeavoured to condense them as much as possible, so much so, that I fear I may have done it at the expense of being misunderstood; I trust however, that as I have confined myself simply to the facts which came under my own observation, the physical nature and resources of the country, will be sufficiently apparent, so as to enable the Medical Board to form a correct idea of the scene of our operations as well as the difficulties which might be expected to attend them. We have stated that the climate has the inconvenience of being rather hot in summer, but then it is free from endemic disease, and for the succeeding nine months, there is not a finer climate in the universe. The diseases in the annexed* return are not a fair criterion of what might be expected to prevail amongst Europeans placed under more favourable circumstances, for ours were employed in the most harassing duties of surveying and sounding a river one thousand miles from the sea, the accounts of which have been hitherto few and erroneous; but even the sickness which we have had to contend with is very trifling, considering that our crews are composed of men whose constitutions have been more or less impaired by a residence in India.

In conclusion we may observe that should this country ever become the theatre upon which the British army would have to engage, the fullest confidence might be placed in the salubrity of the climate; and if our report last year upon the southern part of Mesopotamia be referred to, it will be seen that it also has a very good climate, if we except Bussora and its vicinity.

I am also of opinion that the climate of southern Mesopotamia, would agree better with an Indian army than a northern one, as I have observed they do not bear well the sudden transition from heat to cold, and for a like reason, I would be disposed to keep the Europeans to the north in order that they might avoid the great heat and more humid atmosphere of the south.

* The return is omitted.—C. M.

Article II.

Annual Report of the Native General Hospital at Bombay, for the year, 1841. By A. Graham, Esq.

Presented by the Medical Board, May 1842.

General Observations. — The * admissions during 1841 exceed those of 1840 while the deaths fall short by 28, thus making a percentage of 13. 6 or rather more than 2 per-cent less than that of the preceding year. This difference, however, is chiefly to be attributed to the almost total absence of epidemic disease which had prevailed to a considerable extent in 1840, during which period cholera destroyed a number of natives in the hot weather, and small pox carried off several from the months of January to July. For five preceding years, these diseases have periodically prevailed with considerable virulence. The last year, however, was remarkably free from any epidemic. Only one case of small pox occurred in the month of January as will be seen by the abstract of diseases given below. The abstract will also shew that the prevailing diseases were Cachexia, Diarrhœa, Dysentery, Fractures, Fevers, Hepatic Affections, External and Thoracic Inflammations, Syphilitic Affections, Scorbutus, and Scorbutic Ulcers, Wounds, and anomalous cases.

It seems almost superfluous again to refer to the cause of the great mortality, occurring in the Native General Hospital. — This circumstance has been often forcibly adverted to in former reports. It arises from the extreme state of disease and destitution under which the patients are admitted. For such cases our only resources were palliation of distressing symptoms, to afford an asylum, and thus to mitigate the sufferings of humanity.

* Number of sick.

Remained 31 December, 1840.	129
Admitted in 1841.	1950
Discharged	1639
Died in Hospital	271
Remained 31 December, 1841	169
Average daily number of sick for the year	146.17
Average number of convalescents	
Died without receiving medical treatment	17

In addition to those included in the Return, there were 17 who died so soon after admission as almost to preclude any medical means. Their diseases were as follows: —

Anasarca	1
Cachexia	7
Dysentery	3
Fevers	3
Gangrene of the Penis	1
Hernia strangulated	1
Pneumonia	1
	17

Annual Return of sick of the Native General Hospital, from the 1*st of January to the* 31*st of December.* 1841.

Diseases.	Remained 31st December 1840	Admitted 1841.	Total.	Discharged.	Died.	Remaining.
Apoplexy	..	4	4	..	4	..
Asthma	..	7	7	7	..	..
Cholera biliosa	..	..	..	..	..	..
——„—— Spasmodica	..	2	2	1	1	..
Cutaneous Diseases	10	156	166	149	5	12
Cachexia	4	73	77	32	45	..
Diarrhœa	1	20	21	6	15	..
Dropsical Affections	2	25	27	13	12	2
Dislocations and Sprains	..	1	1	1	..	..
Delirium Tremens	..	5	5	3	1	1
Dracunculus	1	31	32	30	..	2
Dysentery	7	112	119	59	51	9
Fractures	3	30	33	25	6	2
Fevers — Remittent	2	45	47	29	16	2
Fevers — Intermittent	6	192	198	177	5	16
Gonorrhœa	2	44	46	42	..	4
Hepatic Affections — Acute	2	15	17	10	4	3
Hepatic Affections — Chronic	1	17	18	10	8	..
Inflammations — External	3	39	42	36	3	3
Inflammations — Cephalic	..	5	5	3	1	1
Inflammations — Thoracic	1	50	51	22	19	10
Inflammations — Abdominal	1	3	4	4	..	..
Affections of the urinary organs	..	1	1	..	..	1
Mania	..	3	3	2	..	1
Ophthalmic Affections — Acute	3	13	16	16	..	..
Ophthalmic Affections — Chron	4	28	32	30	..	2
Phthisis Pulmonalis	2	11	13	11	2	..
Rheumatism	19	242	261	219	15	27
Spleen disease of	..	8	8	6	..	2
Syphilitic Affections — Primary	18	180	198	180	7	11
Syphilitic Affections — Secondary	8	43	51	41	4	6
Small Pox	..	1	1	1	..	..
Scurvy	1	56	57	46	3	8
Ulcers	11	109	120	93	9	18
Wounds	5	211	216	200	8	8
Other Diseases	12	168	180	135	27	18
Total	129	1950	2079	1639	271	169

Apoplexy. — Of this disease there were four admissions all of the sanguineous form, and all equally unfavourable in their termination. Three of them were brought from off the public roads, and the fourth from Mazagaon. Of the history of two of them nothing could be ascertained that could be relied on ; regarding the other two, one of them was stated by his friends to have been in good health previous to the occurrence of a scuffle, originating in play ; the attack in the other case arose from excessive drinking. A post mortem examination of one of them, disclosed chronic enlargement and disease of the left meningeal artery which had thrown out excrescences of a warty character : these must have been of long standing. A considerable quantity of blood was also effused between the membranes and the brain. The subject was of a spare, thin habit, and of sickly appearance. Bleeding, both general and local, cold applications to the head, sinapisms to the legs and feet, drastic purgatives, and active enemas formed the plan of treatment.

Asthma.—Seven admissions of the spasmodic form of this disease occurred in old broken down subjects. They were all either successfully treated, or relieved, on the usual plan, namely by emetics, antispasmodics of ether, hyoscyamus, colchicum, opium, and conium, together with expectorants of ammoniacum, squills, tartarized antimony, and digitalis ; the application of blisters, rubefacients or the tartar emetic ointment, to the chest, or between the shoulders, and the administration of tonics, after the subsidence of the more urgent symptoms, were also had recourse to.

Cholera. — Two cases of the spasmodic form of the disease were admitted in January, one of which terminated fatally. In the successful case the patient, a peon of Collector Glass's establishment, was brought to Hospital in the commencement of the stage of collapse when the pulse had begun to fail, and four hours after the purging had commenced. There had not been any vomiting, but the aspect was much sunken, the voice feeble and puerile, pulse quick and weak. He had arrived only a day or two previously from Panwell. The disease was then prevailing on the Poona road, and it is therefore probable that it might have been contracted in that quarter some days before its developement. The treatment consisted in the exhibition of calomel and opium and effervescing draughts repeatedly given, and alternated with stimulants of brandy, camphor, ammonia, &c. Blisters to the epigastrium and sinapisms to the legs and feet. After admission, vomiting and slight, yet painful spasms of the limbs commenced with

great and increasing anxiety, the purging ceased; re-action began when three or four doses of the medicines had been given, and after this he went on well. The powers of the stomach were greatly impaired for several days afterwards, but gradually recovered under the use of hydrarg. cum creta, Dover's powder, and tonics. He was discharged well, but weak on the fifth day.

Cutaneous Affections. — Under this head one hundred and fifty-six cases were admitted, five of which died. These all occured in lepers who had long been victims of the disease in its most formidable and disgusting forms. All had lost the greater number of the fingers and toes, and some even a portion of the foot. In these instances no hope of cure could be entertained, and all that could be effected towards their relief, consisted in the application of astringent lotions to the ulcerated parts. These sometimes, for a while, put on a healthy appearance, yet, although tonics and stimulants and nourishing food, were at the same time given, diarrhœa, of a most intractable description, ultimately supervened and destroyed life.

The other cases under this head, consisted chiefly of Psora, and Psoriasis, and were not sufficiently interesting to call forth any remarks.

Cachexia. — Under this designation seventy-three were admitted, forty-five of which ended fatally. The casualties happened generally in individuals of dissipated habits, and who had long been affected with pulmonary, intestinal, and hepatic affections. In some instances syphilis and the abuse of mercury, as prescribed by the native Hakeems, would appear to have destroyed the constitutional energies, though these cases were not sufficiently marked to admit of being entered under general affections.

The state of emaciation and debility in which the cachectic patients were admitted, generally left but little ground to hope for even a partial restoration to health, and this will account for the numerous casualties that occurred.

Of the few restored to comparative health, a small number only seemed capable of earning a livelihood. The termination of the fatal cases was, in most instances, by diarrhœa. The treatment pursued comprised cordials, tonics, expectorants, and anodynes, together with a nourishing diet, and the liberal use of Port wine, and spirits. The astringent most valuable in these cases, was the sulphate of copper and opium. One or two grains of the former, with two or three of the latter, two, three or four times daily.

Diarrhœa.—Of this there were twenty admissions, six of which ended

fatally. The deaths happened in individuals who applied for aid in a very advanced stage of the disease.

The treatment was varied, according to the circumstances, and generally consisted in the exhibition of chalk mixture, combined with opiates and astringents.

In cases of great severity or long continuance, the sulphate of copper and opium were had recourse to. On the disease yielding, light tonics consisting of infusion of gentian, colomba, or cusparia, and a bland nutritious diet were prescribed.

Dropsical Affections. — Twenty-five admissions, and twelve deaths occurring in patients as the sequelæ of extensive and long continued visceral disease or as the sequence of fevers. Albuminous urine frequently existed. What gives rise to this condition or alteration in the urine seems unknown. One singular case that came under observation may be remarked upon. The patient was a married woman who had long suffered from disease of the uterus, irregularity of the catamenia, and a frequent muco-sanious discharge from the vagina. The urine was copious and clear, appetite little impaired, and general health not much affected. She at first, supposed that she was pregnant, but from the long continuance of the ailment this idea was abandoned. After a little preparatory treatment paracentesis abdominis was performed, a small portion of a glairy fluid escaped though a large sized canula. This fluid coagulated immediately on exposure to the air shortly after the operation, and while the patient was warm in bed, a large quantity of the same fluid was freely discharged amounting to several pints. This viscid, gelatinous effusion was most likely caused by subacute or chronic inflammation of the peritoneum. The sudden discharge caused great weakness and sinking which were removed by a light bandage and cordials. The fluid soon re-accumulated to its former extent, and becoming exceedingly anxious and alarmed she was allowed to return home and shortly afterwards died.

Another case requiring a few observations may be alluded to. This was consecutive to and accompanied with a chronic pulmonary affection. In the primary disease auscultation shewed the existence of great contraction of the bronchial tubes. Paracentesis abdominis was performed and four or five pints of fluid drawn off with relief. The bronchial affection, however, continued throughout with occasional intervals of abatement. The treatment consisted in cupping, leeching, blisters and tartar emetic ointment. — Tartar emetic alone and combined with saline purgatives internally; and calomel, squills, digitalis, and colchicum, were also exhibited

with cream of tartar for common drink. Under this treatment he had nearly recovered when he suddenly quitted the Hospital, and returned in a month with his ailment of a more intense character than at any former period. The scrotum was enormously distended with the dropsical effusion. Scarifications were made and the watery oozing from them was most extensive, and continued until nearly all the dropsical symptoms disappeared; recourse was again had to the diuretics, and the former plan of treatment with the most beneficial results. The diuretics which excite the absorbing vessels and remove impediments to the lymphatic and venous circulation, Dr. Copland states, are all doubtful, excepting the preparations of Iodine, and of these the Iodide of iron in leucophlegmatic habits, ending in anasarca affords the most likely hope of relief, but of this our experience is still deficient.

Dislocations and Sprains. — Only one case of dislocation, that of the humerus into the axilla, occurred.

Delirium Tremens. — Five admitted, one of which proved fatal. The casualty occurred in a Portuguese of very dissipated habits. On the third day after being received into Hospital, he was in a highly excited state, having been unwell for several days previous, during which period he had taken no food, but had drunk large quantities of brandy ; tongue was of a dull red colour. He had great pain and tenderness in the region of the liver and stomach, occasional vomiting on taking fluids ; opium, combined with antimony and camphor, was freely given at intervals and seemed for a time to be beneficial. Ultimately, however, great restlessness and debility supervened, with cold clammy perspirations when stimulants of brandy and ammonia combined with anodynes, were given, and blisters were applied to the back and stomach, and sinapisms to the legs and feet, but without any good results. He had previously suffered several times from the same complaint, and had been once or twice in the European General Hospital. In one of the successful cases an East Indian, a printer, who was greatly addicted to drinking and in whom all the symptoms recorded above existed, though they had been of shorter duration, the gastric affection was less severe, and the constitutional powers less impaired. In this case 78 grains of opium and 27 grains of morphia in tincture were taken in nine days before the symptoms entirely yielded. In two of these nine days, about 8 grains of morphia were given daily before sleep was induced, and of the opium 18 grains were exhibited in one day and 39 grains in another. This exemplifies the peculiar state of the nervous system in this complaint and

shews the great extent to which it is sometimes necessary to exhibit anodynes to maintain and at last gradually restore its functions. In some instances of this disease the cold affusion was found an auxiliary.

Dysentery. — One hundred and twelve admitted. Fifty-one deaths occurred, chiefly in patients who came to Hospital either in the advanced stage of the acute or in the chronic form of the disease. In the first, calomel and opium, leeching, blisters, fomentations, blue pill, or the hydrarg. cum creta, combined with ipecacuan. and gentian extract, or with Dover's powder, or the acetate of lead and opium, or the chalk and opium powder, with anodyne enemata, or opiate suppositories, were the means used. In the latter, sulphate of copper and opium was found the most valuable remedy that could be used, in doses of from 1 to 3 grains of the former and 2 to 5 or 6 grains of the latter, thrice daily, or even more frequently in extreme cases. In the successful cases general or local blood-letting or both. Twining's combination of blue pill, ipecacuan. &c. calomel with ipecacuan. and opium, and when much blood was voided, the acetate of lead and opium from 2 to 6 grains of the former, and 3 to 6 of the latter with diluted vinegar as drink to prevent the acetate passing into the state of carbonate in the bowels. These with the application of blisters, followed by light, astringent, bitter tonics during convalescence, nourishing diet and Port wine, were the principal means employed.

Fractures. — Thirty admissions occurred under this head, six of which terminated fatally. These were compound and comminuted fractures of the bones of the lower extremities, attended with much constitutional irritation, and leaving no alternative but operations to which the patients would not submit until it was too late. In one case affection of the brain occurred after the accident, and which, though relieved, by the usual depletory means, carried off the patient. Inspection of the body, however, disclosed the cause of death to have been disease with hypertrophy of the heart. There were no symptoms during life to indicate the existence of this disease. Several amputations were performed. One at the shoulder proved quite successful.

Fever Remittent. — Forty-five admissions; sixteen deaths. Of these one died on the first day, three on the second, one the third, one the fourth, two the fifth, two the sixth, one on the eight, two on the ninth, one the thirteenth, and one the twenty-fifth. Several of these cases were people brought from off the public roads by the Police. In most of them the head, stomach, liver, or chest were more or less affected.

The treatment pursued was blood-letting, general and local, according to the urgency of the symptoms, purgatives and enemas, nauseating doses of tart. of antimony and ipecacuan., mercurial and saline diaphoretics, blisters, cold lotions to the head, and sponging, tonics of bark, quinine and wine, as soon as they could with propriety be administered.

Intermittent Fevers. — One hundred and ninety-two admissions, five of which terminated in death. These had long suffered from the disease, which was complicated with organic affection of the liver, lungs, spleen, or bowels. They had been dissipated or were affected with syphilis.

The treatment consisted in the administration of emetics, saline diaphoretics in pyrexia, and bark or quinine during apyrexia; leeches and blisters were also sometimes employed. And when the spleen alone was enlarged, spleen mixture was found a very valuable remedy and was much used.

	Admitted.	Died.
Hepatic Affections. Acute	15	4
Chronic	17	8

Two of the cases were complicated with jaundice; four terminated in abscess or diseased bowels. The chronic generally ended in abscess. In the acute cases the treatment consisted of general and topical blood-letting; mercurial and saline purgatives, mercury so as to affect the system, and blisters, and after the acute symptoms had subsided, mild tonics and moderate diet were allowed. In the chronic cases topical bleeding, blisters, rubefacients, laxatives, mercurial alteratives, blisters and attention to diet.

Inflammations External.

	39 Admitted.	Died 3.
Abscess of the Hand	2	
———„——— of the Legs	2	
Bubo Simple	3	
Cynanche Parotidea	2	
Erysipelas	1	
Erythema	1	
Furunculus	7	
Inflamed Arm	2	
—„— Foot	1	
—„— Knee-joint	8	1

Inflamed Jaw	1	...
——„—— Scrotum	4	1
——„—— Testicle	2	...
Inflamed Thigh	1	1
Phlegmon	2	...
	39	3

Of the fatal cases one was from sloughing of the scrotum; one from suppuration and disease of the knee-joint, and the third from extensive suppuration below the fascia lata of the thigh, extending up from above the knee to the trochanter major. The adhesive inflammation was not excited, nor the cavity of the cyst destroyed in consequence of disease of the thigh-bone, pieces of which once or twice exfoliated. The result was the frequent collection and discharge of vast quantities of pus under which the patient sunk and died. In all the three cases suppuration was established before admission. The treatment consisted of rollers regularly applied, poultices, fomentations, anodynes, tonics, wine and generous diet.

In the successful cases, general and topical blood-lettings were had recourse to, and poultices, cold and warm lotions, blisters, fomentations, diaphoretics, mercurials, &c.

Cephalic Inflammations.—There were five admitted, and one death from inflammation of the membranes of the brain in a Portuguese. This case of meningitis is rather singular, as supervening suddenly during quotidian fever. The latter was of a very intense character, but regular in its periods of accession. These accessions, previous to admission and for some days afterwards regularly recurred in the afternoon. After free purgation, bark and quinine were resorted to but did not succeed in checking the disease. Headache, of which he had more or less complained, during the hot stage becoming more severe, the tonics were abandoned, and as venous congestion seemed to have occurred, he was bled from the arm and mercurial combined with saline purgatives administered, together with antimonials, and leeching to the temples. These measures seemed to afford some benefit, when about the seventh day, the patient became suddenly insensible, and stertorous breathing followed with contraction and perfect insensibility of the pupils. Blood was again immediately drawn from the arm, drastic vegetable purgatives and enemata given. Cold to the head, and mercurial frictions were used without success, and he died on the third day after the commencement of the attack.

A post mortem examination disclosed the existence of violent inflammation of the meninges of the brain with excessive serous effusion between the piamater and brain. This and the arachmoid were raised from the brain, much thickened in structure and easily separated from each other by the fingers. The effusion, extended into the spinal canal from which, when depressed, fluid oozed copiously into the base of the skull. The surface of the brain was softer than usual. The lateral ventricles did not contain more than the usual quantity of fluid. The two successful cases were both of phrenitis cured by blood-letting, both general and local. Purgatives, calomel combined with antimonials, and diaphoretics.

Thoracic Inflammations. — Fifty admitted. Pneumonia 20; Bronchitis 20; Catarrh 2; Pleuritis 7; Carditis 1. Of these died of Pneumonia 13 within twenty-four hours after admission; two died after two days, five after three days, one after four, one after five, one after eighteen, and one after twenty-seven days.

From bronchitis three casualties occurred. In four days one, in fifteen days one; in twenty-one days one. Of pleuritis only one fatal case which took place on the fourth day after admission. Of carditis one died in the third month. Two of those included as pneumonia died of diseased heart. The case of the first, Seedee Joyee, is appended. The other patient had all the symptoms of severe rheumatism, but a post mortem examination disclosed the heart to be enormously enlarged and to have been the cause of death. The case borne carditis was in a Purwaree, a discharged sepoy, who had long suffered from the disease and who was repeatedly relieved from acute or subacute attacks by bleeding general and topical, blisters, antimonial nauseants, hydriodas potassæ, and digitalis; but he ultimately sunk. After death the heart was found enlarged and hypertrophied with adhesions of the pericardium to the heart's surface.

General Treatment. — Blood-letting, general and topical, blisters, and rubefacients, purgatives, tartarized antimony in large doses. Expectorants, and when the more urgent symptoms subsided, calomel in small doses combined with ipecacuan. James' powder, camphor, extract conii or ganja. The latter in doses from one to four grains seems to be a most useful adjuvant in procuring rest in cases where the nervous and vascular systems are irritable and excited. Ultimately, bitter tonics of quinine or gentian were given.

Abdominal. — Three admitted; all peritonitis; no deaths. The usual treatment was adopted.

Ophthalmic Affections.—Acute thirteen admitted of various forms and many of great severity. The usual antiphlogistic treatment was pursued during the inflammatory stages, followed by caustic and anodyne remedies.

Ophthalmic Inflammations, chronic.—Twenty-eight of various forms of the disease were admitted. All successfully treated.

Rheumatism. — Two hundred and forty-two admitted and fifteen casualties. The latter occurred in worn out and broken down constitutions. Organic disease of the liver or lungs and diarrhœa were generally the sequence of the primary disease and cut off the patients. In addition to the common routine of remedies the extract of hemp or ganja, was used with good effect in mitigating pain when very severe, and relieving the nervous irritability without any of the unpleasant results arising from opium.

Spleen Diseases. — Eight admissions all successfully treated. In one case the spleen was enormously enlarged. This viscus is connected, in a remarkable manner, with the stomach by the vasa brevia, adhesions and ulcerations may have gradually taken place between the two organs, as the patient was suddenly seized with severe vomiting of dark grumous, clotted blood, mixed with shreds of coagulated lymph. This pulpy substance seemed to be the dissolved spleen and was brought up to the extent of several pounds, after which the viscus was suddenly reduced to its natural size, and the patient left the hospital convalescent. This is supposed to be the only instance known in this part of India, of diseased spleen bursting into the stomach.

Syphilitic Affections. — Primary, one hundred and eighty admissions, seven deaths, chiefly among females from sloughing of the genitals, presenting a most disgusting state of disease. A few males died from a complete breaking up of the constitution.

The general treatment consisted of purgatives, alterative mercurials, hydriodate of potash, lotions of the nitrate of silver, or sulphate of copper, or zinc. In the extreme cases, cordials of ammonia, camphor, opium, quinine or bark, and wine were administered with the application of turpentine oil alone, or diluted, cataplasms, nourishing diet, and when diarrhœa supervened, astringents were used.

Small Pox. — One admitted; one cured.

Scurvy. — Fifty-six admitted; three deaths, occurring in individuals who were in an extreme state of debility with diarrhœa. Two were receiv-

ed from the Bazar and one from the harbour, an Arab. Several severe cases from Aden, all recovered.

The treatment consisted of nourishing diet and vegetables. The vegetable acids and the following draught given three or four times daily.

R. Pulv : cinchon : ℥i Lime juice ℥iv arrack and syrup *a a* ℥ss Tinct opii vel Tinct. Mur. Morphiæ ℥ss ℥i m.

This plan was found very effectual. In some cases where the stomach was irritable, quinine was substituted for the bark, and when fever was present, which was generally the case in the afternoon, saline diaphoretics were used, and when the limbs or joints were painful, a few leeches repeated when necessary, and frictions with anodyne stimulating liniments to the stiff and painful limbs. Fomentations and tepid baths were also employed.

Ulcers	Admitted	Died
Scorbutic	16	
Simple	79	2
Sloughing	11	7
Irritable	3	

One hundred and nine admitted, nine deaths, all occurring in subjects where the disease had become incurable from the state of the general habit, or from the parts becoming so much involved as to prevent amputation. At an earlier stage of the disease when operations might have been performed with success, the patients could not be persuaded to submit. In some of the cases diarrhœa supervened and carried off the patients. One of these sufferers, an old man, was admitted from the Dhurumsalla. Extensive ulceration of one foot existed with induration and discoloration, the consequence of a leprous diathesis ; purging ensued and destroyed the patient. Another individual, having extensive sloughing of the foot and loss of the toes accompanied with necrosis of the tarsal and metatarsal bones, consented to amputation, but on the table, his courage failing him, he was removed. Scurvy of a most severe character, in this case, supervened, resisting all the remedies, and notwithstanding the greatest attention the patient died, after enduring the greatest suffering, in ten days after the septic symptoms appeared.

The treatment in the severe cases, consisted of warm turpentine and resinous dressings, creosote and cataplasms, lotions, &c. anodynes, cordials of wine, ammonia, camphor, &c. Vegetable diet, quinine, bark, acid, and gentian were also employed and astringents. The chlorides of lime and soda were found highly useful in correcting the fœtor from these ulcers.

In all the scorbutic ulcer cases the antiseptic tonic draught, and, gene-

ral treatment referred to in scurvy, were found the most useful means for improving the general constitution, and indirectly, the ulcers.

Wounds. — Contused one hundred and sixty-one admitted; incised, and lacerated forty-three, punctured four ; Total two hundred and eight. Discharged from these two hundred. Died eight. The casualties were almost all cases requiring judicial investigation, and several of them not devoid of interest. In the middle of the night of the 19th of April a young Brahmin was brought to Hospital. From jealousy an assassin plunged a sharp pointed creese, while his victim lay on his belly, close to the right side of the spine below the eighth rib, completely dividing the ninth, and forming a long punctured wound in the inferior lobe of the lung. In this case it was remarkable to observe the beneficial effect of repeated blood-letting. The intense feeling of suffocation was always relieved by it, and life prolonged for several days.

Other Diseases. — Under this head a number of diseases are arranged, amounting altogether to one hundred and sixty-eight. Of these twenty-seven died. Among the latter were some cases of gangrene. One was a woman, who while coming from the Bazar, fell down and broke a bottle of oil which she was carrying. One of the pieces of glass divided the radial artery. In vain the natives attempted, by every means in their power, to restrain hemorrhage, and as a last resource, bandages were tied as tightly as possible round the arm. Enormous swelling and mortification ensued, extending nearly up to the shoulder. The limb was removed on the 10th September, but it was too late ; the irritative fever continued and destroyed the patient.

In another case, a most horrible object, was taken out of a ditch, left there no doubt to perish ; sphacelus of the penis ; involving the whole of the scrotum had taken place ; the parts were a perfectly soft gangrenous mass. The patient was pulseless and almost lifeless. The mortified parts were immediately removed ; the natural passage of the urethra was discovered and the accumulated urine drawn off. Yet notwithstanding the most assiduous employment of ammonia and the diffusible stimuli, the powers of life could not be restored.

The number of amputations has been considerable, but have been performed in cases which almost precluded much hope of success. Owing to the prejudices of the natives they seldom consent to undergo an operation, until the powers of the constitution are almost exhausted from the local disease, and the blood has become quite corrupted. One case of amputation, performed under these adverse circumstances at the shoulder joint,

proved quite successful. Under the head of "strangulated Hernia" an equally satisfactory termination under similar disadvantages followed. The patient was sent to the Hospital after the failure of all the means of relief employed. The sufferings were intense: the pain as if a cord were tied tightly round the upper part of the bowel, was acute, accompanied with rejection of feculent matter from the stomach. Previous to admission, reduction, by the taxis, had been attempted in vain, and again tried in Hospital and to render it successful tobacco enemata, large bleeding, the warm bath, &c. were employed. At last the patient consented to an operation, the stricture was removed, and the strangulated portion of the bowel found highly inflamed. Owing, however, to the unmanageable character of the man, a stout lascar, and the violent struggles that he made, a great quantity of the bowel was protruded. The whole was at length reduced, and the patient, in a few months completely recovered. Under this head is also ranked, *Poisoning*. Twenty-eight cases have been admitted. These have come into Hospital frequently in a short space of time, thus conveying an impression that the poisoning was systematically carried on by a gang of thieves, who reduce their victims to a state of insensibility, and then rob them. The poison chiefly used is the datura stramonii, the seeds are powdered and given in sweetmeats or in the curry of the natives.

The patients after recovery generally give the following account. That they had been invited to partake of sweetmeats by a stranger on the streets, which after they had eaten, insensibility followed, when they believed they were plundered. The symptoms have been already described in other reports. The patients go through a number of ridiculous gesticulations, and are constantly rising up and sitting down. Strong emetics, the stomach pump, and the use of douches, constituted the treatment.

Under the Head *Tetanus* three cases have occurred. On this disease much conjectural matter might be written, and some endeavours made to point out the intimate connection of the neuroses, but the pathology of this class is still so very obscure that facts can only be admitted in an Hospital Report.

Allusion, however, may be permitted to the remedies. The extract of hemp has been found highly beneficial in tetanus, and more or less so in abating and soothing the severity of the symptoms in all the class of spasmodic diseases, whether affecting the animal, natural or vital functions. Dr. William O' Shaughnessy has perhaps recommended this remedy in too flattering terms in tetanus. It has been extensively used in this disease in the Native General Hospital, and for the mode and results of its employment, reference must be made to cases published in the Bombay Medical

and Physical Society's Transactions. * It will most likely be again brought to the notice of the Superintending Surgeon in future reports, so as to assign its proper place in the materia medica.

In conclusion it may not be irrelevant to observe that nineteen cases of Inquest have occurred at the Native General Hospital, all affording much grave matter for remark, but to which attention cannot now be directed.

* No. iv.

Article III.

Annual Medical Report of H. M. 2d or Queen's Royal Regiment, from the 1st of April, 1841, to the 31st of March, 1842. By R. H. A. Hunter, Esq.

Presented, August 1842.

Station, Deesa. — Lat. 24° 12′, Long. 72° 25′ East. Height above the level of the sea, under two hundred feet. Distance from the sea, one hundred and twenty miles North-East: no hills intervening. Winds variable at all seasons, but in the cold months chiefly from the North and West. In the hot, South and South-West, occasionally with volumes of dust. In the rains, Southerly. Rainy season from the middle of June to the end of September. Average annual fall, eight to twelve inches. The past season was unusually wet.

Thermometer's highest diurnal range in April, May, and beginning of June, 92° to 101°. Lowest at 6 A. M., 74° to 89°. Highest in July, August and September, 80° to 96°. Lowest at 6 A. M., 75° to 85°. In October, 83° to 92°, and 65° to 79°. In November, December and January, highest 69° to 88°. Lowest, 49° to 78°. February, 62° to 87° (from the 12th to 20th extremely low) and 49° to 66°.

The cantonment at Deesa, three miles from the village of that name, is situated upon two or three pretty regular elevated ridges on the left bank of the Bunass river, that allotted to the 2d or Queen's Royal being the farthest removed and the highest, upon a vast, arid, semi-desert looking plain, bounded to the North-East by an irregular chain of mountains, of which a few low and detached, approach within six or eight miles of the cantonment. This is during the hot season, for in a favorable year in the rains, the whole face of the country presents a rich verdure of pasture and grain, interspersed round the different villages with clumps of high trees.

There are no jungles of moment in the immediate vicinity, but plenty all round, nearly at a distance of from three to six miles. In these as indeed every where uncultivated, the grass shoots up very rank during the monsoon, even on what in the hot weather seemed little better than burn-

ing sand. Very little of this is cut, so that towards the end of the year it becomes trodden down, withers and decays, and finally mixes with the soil.

The soil is a light colored mud naturally and deep, but where much cultivated, partakes more or a less of a darker hue. The river at present scarcely deserves the name, though once I believe a tolerable stream during the rainy season. In its bed are several swamps, with mud, rushes and long grass, but they are two insignificant, perhaps, and far removed materially to affect the salubrity of the cantonment.

The *Barracks* occupied at Deesa by the 2d or Queen's Royal, about a mile South-East of the river and forty feet or so above its level, consist of ten substantially brick-built and tiled long rooms, detached in two parallel lines facing the South-West. Two of these, new ones, are each 180 feet in length, the others 156 by 23½ in breadth, and 14½ in height of walls, exclusive of two small rooms, nine feet by nine walled off at either end. There are small rooms also walled off, the corners of the verandas for Serjeants &c. a little detached to the left, three parallel rows of tiled huts contiguous for the married people, in all about forty of them.

The long rooms have front and rear verandas, and are well ventilated by the doors, windows, and large oblong openings in the roof, surmounted with wooden tops, rendered waterproof by tarpaulin.

Upon the whole, the barracks are well adapted for the accommodation of 800 or 900 men, but for the present strength of the regiment, in a climate of this kind, where little aid is afforded to the ventilation from difference of temperature without and within the Barracks, they are too small. This in the hot weather, however, is in some measure obviated by part sleeping outside under tents, of which two rows without walls are pitched immediately in front.

The *Hospital* is also a very substantial building of the same material as the Barracks, but much too small for the present strength. It has four wards fifty-five feet by twenty-five, and two twenty-five feet square, all in one line with a veranda in front and rear, nine feet in breadth. The front veranda is built in, and having numerous venetians and glass windows, is generally used for convalescent wards. With iron bedsteads the body of of the Hospital might accommodate one hundred patients, but with the present clumsy wooden ones seventy or eighty render it very crowded.

Water is abundant at all seasons from wells at a depth of from sixty to eighty feet, and of a quality very superior. There is a well within the Hospital inclosure, and three between the Barrack rooms, all wrought by means of bullocks.

Diet and Rations. — No salt provisions are used, there being always plenty of beef or mutton in the market, though the former perhaps is of inferior quality. Vegetables however are scarce, but more on account of the expense of raising the water for irrigation, than from the climate or soil. All kinds of European vegetables grow very luxuriantly in the cold season, and even potatoes if care be taken to procure good seed. These last, however, are generally small, and only to be had from January to June.

Duty and Employment. — The duties have been comparatively light amounting to little more than Regimental Guards, Parades, and Drills, and therefore can have had little extraordinary influence over the health of the corps. The Light Infantry drills in the cold season, however, generally send a number of the old soldiers into Hospital, with stitches, pains in the chest and shortness of breath, which arises from few of the class being altogether free from some degree of chronic bronchial lesion, or "broken wind." (These constitute the greater portion under "catarrh," in the return: common catarrh is very rare.)

Intemperance. — With regard to this, it is sufficient to say there has not been a case of "Delirium Tremens," the best criterion, with Head Quarters during the year. One invalid, however, died of it in Colaba, Bombay.

Average Strength.—The average strength at Head Quarters has been 893; and the deaths 17, but as we ought perhaps to add the invalids sent down to Bombay, in the end of October, with diseases which may be supposed to have been contracted at Deesa, the average will be 918 and the deaths 25, exclusive of two invalids for epilepsy, one of whom was drowned on the way down whilst bathing, and the other "found dead," at the Presidency.

But if we include a detachment of recruits at Bombay during the rains, the average strength in the country will have been 966, and the deaths 33, exclusive of the two invalids already noticed.

Invalids, 50 left this for the Presidency, of whom ultimately embarked for England 28. Two were pensioned in the country, and the rest are either dead, or have returned to Head Quarters.

Remarks as to the Principal Classes of Diseases, &c.— On a reference to the return of admissions and deaths, section IX, it will be observed by far the greater portion of the sickness and mortality has

been occasioned by fever and its sequels, and that chiefly of the gastro-enteric and gastro-hepatic species or autumnal remittent, which though not of a fatal character was very prevalent last year, owing, it was supposed, to the unusual wetness of the South-West monsoon. It is true, a very great proportion of the deaths occurred in December, but this we attribute to the sudden setting in of the cold season, urging on the hepatic complications to abscess, and the gastro-enteric to dysentery, as we have elsewhere remarked, the change being equal to that from a hot to a cold climate. Relapses had been extremely frequent in October and November, and almost all the fatal cases were of that description.

The cerebral fever of the hot season was much milder however last year, which may in a great measure be attributed to the comparatively moderate temperature, six to eight degrees below that of the preceding, and the cleaner state of the Barracks and their vicinity, for it must be remembered, in 1840, these lines had been lying waste for nearly eighteen months previously, and that the mortality occurred soon after the arrival of the Regiment. Nevertheless we had a few very threatening cases in the beginning of June just before the rains commenced, one patient indeed lay comatose for several hours during the first or second exacerbation. One also became comatose in November, within the first twenty-four hours, and died the following night, but on the post mortem examination, the only local affection found was an intense gastro-enteritis with the caecal valve very much resembling the everted eyelids in acute purulent ophthalmia. A similar case occurred in March 1841, but in this the patient lingered upwards of a fortnight, comatose. Nothing very remarkable was observed in the brain, but the caecal valve was thick, fleshy and ulcerated, and there was a large ulcer in the stomach nearly penetrating. One died of of gastro-catarrhal fever in April, and almost universal bronchitis and several ulcers at the extremity of the ileum, and one in May, of similar origin coupled with gangrene of the lower left lobe of the lung. This last had been long in hospital, and was greatly reduced.

In December, we had two or three cases complicated with pneumonia of a lower lobe, and another proved fatal, gastro-hepatic, accompanied with purulent infiltration of the upper right lobe. This month also the hepatic and dysenteric were much mingled, at least the fatal cases, ulceration of the intestines more or less general, and abscess of the liver conjoined, in almost every one of them.

Of pure dysentery or colitis, at least in a severe form, we have scarcely had an instance. One fatal case in October, in an old soldier, was evi-

dently accompanied with hepatic disease, the others occurred at all seasons indifferently and may possibly have been of febrile origin.

One admitted in September, under enteritis, from the acute pain and tenderness in right iliac region, turned out a case of psoas abscess, of which the patient ultimately died, in December. The abscess was found to extend from near the trochanter minor to within the thorax, but behind the pleura. The transverse processes of the vertebræ and spine of the ilium were extensively corroded, and the sac was lined with a dark colored membrane, which also invested the large vessels, leaving their proper coats underneath healthy.

The bellies of the psoas and iliac muscles had disappeared, and the abscess was nearly bursting posteriorly through the lumbar region. The sac, colon and ileum, were firmly adhering anteriorly, with thickening and matting of the peritoneum.

Consumption. — The two fatal cases of this had been in Hospital the greater part of the year, and were in consequence invalided. Both were old soldiers. They died soon after their arrival at the Presidency. The other of pulmonic disease as per returns, was a sequel of fever.

Brain, Diseases of. — Of the death under cerebral disease, one was an invalid for idiocy. He had two or three paroxysms of tertian ague before leaving Deesa, followed by purpura, and died near Cambay. Another invalid died of delirium tremens at the Presidency, and the third was a case of apoplexy or coup de soleil at Colaba, of the recruits there during the rains.

Here too ought to be noticed the two epileptic invalids already alluded to, who died out of Hospital.

Cardiac and Aortic Disease.—Under this head, there has only been one death this year. Another, however, has been invalided, and two have died since; see cases, Section, XI. When we look over the returns for the last two years, we cannot fail to be struck with the diminished mortalty by this class of diseases. The cause, however, is sufficiently obvious when we look to the age and period of service of the men now in the corps, and the comparatively light duty. It was no doubt the frequent and protracted Brigade drills at Poona, aided by the still faulty dress, which rendered these diseases so remarkably fatal at that station, and for some years afterwards.

Having now given a general outline of the diseases of the past year, we may enter a little more minutely into the nature of the *fevers*, the princi-

pal class, with a view to elicit something relative to the most successful practice or mode of treatment, and in doing so shall contemplate them under three grand divisions, taken from the more prominent symptoms and the season of the year, at which they more particularly prevail. Not that we consider them, distinct species. On the contrary we conceive them to be essentially one, and the grand cause "Malaria," the same in all; the season of the year and particularly predispositions only creating variety.

The first we shall call the *cerebral.* It is that more peculiar to the termination of the hot season. It commenced last year, on the 22nd of May, and though once or twice partially checked, apparently by a reduction of temperature immediately succeeding to heavy dust storms, upon the whole increased in frequency and severity, till rather abruptly put a stop to by the setting in of the rains, about the 16th of June.

This fever generally of a remitting or distinctly intermitting type, was characterized in the hot stage, by flushing redness and heaviness of the eyes, in some cases from the first with a degree of stupor, intense burning heat of skin, with an earnest desire for the cold affusion, and violent headache occasionally in a few hours gliding into coma or apoplexy. Never having witnessed a fatal case of this fever at Deesa, having been absent with the 17th Regiment, when it was so fatal in the Queen's Royal in 1840, my remarks as to its nature are chiefly founded upon its symptoms.* There may be gastric complications also, or these may be the primary and the cerebral symptoms merely secondary, from the predisposition given by a high temperature. Indeed this was the case in two fatal instances similar apparently, but at a different season of the year, and this in the treatment has been kept steadily in view.

In this fever I believe the best practice to be a moderate venesection on admission, 12 to 24 ozs., according to the "tolerance," age and constitution of the patient. Large bleedings I conceive to be positively injurious in all the fevers of Deesa, by creating or increasing the congestions. A purgative of calomel and pulv. jalap. c., to which I add pulv. ipecacuan. grain i. in lieu of antimonial or James' powder on account of the gastric complications, and afterwards a plain solution of the sulphate of magnesia. Leeches to the temples or head generally, cold affusion, cold sponging, cool drinks, saline mixture with nitrate of potass or small doses of Seidlitz every two or three hours, &c., and on the first remission sulphate of quinine. Calomel grains iv. or pil. hydrarg. grains x. every night, resuming

* Since writing the above, I have met with a fatal case. Venous congestion in the head, &c. Stomach and bowels *quite* healthy.—June 1842.

the sulph. magnes. during the exacerbations, or the saline mixture or Seidlitz according to circumstances. The quinine, however, is the grand remedy, and it would be surprising, perhaps, if we had the means of comparing the difference of mortality by these fevers before and since the general introduction of this medicine. We generally begin with grains iv. to vi. where the previous exacerbation has been alarming, whatever be the local complication, and direct our remedies to that, totally independent of the quinine.

The second we have called the *gastro-enteric* or autumnal remittent. This commenced with September, a little later than usual at Deesa; reached its acme in the beginning of October, during the first three days of which, 25 cases were admitted; declined rapidly after the 12th of that month, and by the 20th had all but ceased in its primary type form, though relapses and re-admissions of an intermitting type continued frequent for two or three months after.

This fever was usually ushered in with languor and debility, shivering, or alternate flushes and chills, with a feeling of distension, fulness, and tenderness at epigastrium, or in front of one or other cartilaginous border, sometimes with flushing, redness of the eyes, and other cerebral symptoms; coma, convulsion, &c.; skin hot; bowels confined or relaxed; pulse 120 to 130 or upwards; tongue pretty clean and moist, but in the bad cases more often covered with a white frothy slime. The greater number were admitted at some period of the day or towards evening in the hot stage. Next morning there was a more or less perfect remission, followed, at from 9 to 11 A. M., by exacerbation, and again towards evening by remission. The local or gastro-enteric symptoms also remitted more or less perfectly. Sometimes, more particularly latterly, these exacerbated without the fever in the form of acute pain and tenderness or diarrhœa.

In these fevers it is absolutely necessary to have constant recourse to the physical signs, otherwise the gastritis is almost certain to be mistaken for pulmonary disease. Whether it is from the pain caused by the depression of the diaphragm, I know not, but they refer the seat of it to their chest, which taken with the dyspnœa or panting is sure to mislead. And the enteritis for hepatitis or splenitis. Here they complain of the side, whereas on examination it is found to be in front of that, and that the part on percussion sounds "plus gastric." A clear tympanitic sound may generally also be elicited over all the left hypochondrium, and along in front of right cartilaginous border, whilst from the sixth rib upwards it is distinctly thoracic. In the cold season however, hepatitis is apt to supervene, but I have found only one case of enlarged spleen, and that was

in a recruit who had the fever repeatedly also in Bombay and on the march up.

In the treatment of this fever, we find the tolerance of venesection, the patient sitting up in bed, scarcely exceeds 8 or 10 ozs., except in such cases as are complicated with cerebral symptoms, when 16 to 20 ozs., may be abstracted before any tendency to deliquium is evinced. In all, except the last, we are persuaded venesection is injurious, yet these cerebral symptoms are so insidious during the first or second exacerbation that we question whether it is not the safer rule to bleed in every case on admission, to the extent of the tolerance, and particularly with young soldiers of a full habit. Nevertheless it must be admitted, the greater proportion of the deaths by hepatic abscess and dysentery as sequels, have occurred where antiphlogistics, and more particularly bleeding, have been most freely employed, making every allowance during the last year, not less than as $2\frac{1}{2}$ or 3 to 1.

Comparing the same classes during the autumnal months, we find the proportional number of days in Hospital to have been as $11\frac{1}{2}$ (former) to $9\frac{1}{2}$, but the relapses nearly equal, except in October, when they were also much in favor of the very moderately antiphlogistic nearly as 2 to 1. The only fatal case of fever however, properly as fever, was of the latter class, delirium rapidly followed by coma, convulsion, and death : the complication, an intense gastro-enteritis. We ought especially to be on our guard in this fever when delirium supervenes at an early stage. Free leeching, cold affusion, &c. can alone save our patient from coma or convulsion. The last by itself is perhaps not very dangerous, but when preceded by coma the case is almost hopeless.

Blisters too we conceive to be highly dangerous when there is any tendency to abscess of the liver. Moderate leeching in these cases, fomentations, &c.; in fact a soothing method of treatment, is by far the best.

The third variety we have elsewhere called the *enteric* but it might be as well characterized perhaps as being of a distinctly intermitting type, and appears to be a continuation or relapse of the autumnal remittent. In our statistical review of last year, we said hepatic complications were rare compared with Belgaum, a similar climate in the cold season. The cause of this unusual proneness to abscess of the liver I know not, but certainly that, with gastro-enteritis or dysentery, as sequels of fever, has been the most fatal of all diseases. We have had no marked case of primary hepatitis however, and comparatively few of dysentery. Neither have we had any fatal case, of fever simply as fever, except one on the 1st of April belonging to last year rather, and one in November, and even these may

be said to have proved fatal solely through their complications. In all the others the fever had been overcome a considerable time before death.

With regard to the treatment of this variety, we have little to add to what we have already advanced. Being of an intermitting type, and generally complicated with enteritis, it requires like the last a moderately antiphlogistic soothing mode of treatment, and quinine. In these sequels we have found quinine and opium, with other remedies according to circumstances, of the most marked benefit.

Here the same necessity exists of taking care not to confound gastro-enteric disease with pulmonic, and more particularly as we have seen, a few cases, in the cold season, are liable to be complicated with a partial pneumonia.

No. 1. — *Return of Admitted, Died and Invalided, of H. M. 2d or Queen's Royal Regiment, from the 1st of April 1841, to the 31st of March 1842.*

Diseases. Strength, 966.	Admitted.	Died.	Invalided.
Fevers (not Eruptive)	688	10	"
Diseases of the Lungs	131	3	3
——— of the Liver	16	3	"
——— of the Stomach and Bowels	398	13	3
——— of the Brain	42	3	6
Dropsies	6	"	"
Rheumatic Affections	93	"	2
Venereal	152	"	"
Abscesses and Ulcers	112	"	"
Wounds and Injuries	131	"	3
Punished	11	"	"
Diseases of the Eyes	32	"	"
——— of the Skin	41	"	"
All other Diseases	116	1	11
Total	1969	33	28

No. 2. — *Monthly Abstract of Admissions under Fever, and of Deaths, under that and its sequels, at Head Quarters, Deesa. Strength* 893. (*Corrected.*)

Fevers.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.
Intermitting Fevers	"	"	"	"	"	3	11	17	27	"	"	"
Remitting and Continued	17	30	91	28	34	"	"	"	"	20	21	27
	"	"	"	"	"	63	132	47	25	"	"	"
Total	17	30	91	28	34	66	143	64	*52	20	21	27
Of these Re-admissions	"	"	"	"	"	"	21	41	22	"	"	"
Deaths (Fevers and Sequels	3	1	"	"	"	"	1	1	8	"	"	"

* A Detachment of Recruits joined on the 6th December, many of whom had Fever.

No. 3.—*Abstract of Deaths at Head Quarters, from Fever and its sequels, shewing the specific complications of each, with the results of post mortem examination.*

Disease.	Died.	Complications.		Autopsical Results.
Fever.	"	Gastro-Enteric . . .	1	Inflammation of stomach and bowels ; died in 36 hours.
	"	Gastro-Hepatic. . .	5	Ulceration of bowels and hepatic abscess in all. In one purulent infiltration, lung.
	14	Gastro-Catarrhal . .	2	Ulceration of bowels ; one gangrene, lung ; one bronchitis.
Sequels.	"	Enteric	4	Ulceration of bowels; one with peritonitis.
	"	Hepatic	1	Hepatic abscess ; bowels not examined.
	"	Purpura & Gangrene.	1	Purpura and Gangrenous sores.

To shew whether the sickness and mortality has most affected young soldiers or those advanced in life, the long resident or newly arrived, the remaining tables have been framed. The high ratio of mortality amongst recruits of the first year is very striking, and that it is not accidental we have proved by collecting all who came out originally with the Regiment, together with all those who have joined subsequently as recruits, 2099 in the aggregate, which gives 60.1 per 1000 of strength, instead of 58.8.

It would be wrong however to attribute to non-acclimatization, for it may be sufficiently accounted for, from the first six months residence of the great majority of them having been at Colaba, Bombay, during the rains, and afterwards from many of them having had to march a long way to join their Regiments. Those causes, to our knowledge, have more than doubled the ratio.

No. 4. — *Abstract, shewing the composition of the whole Regiment, classed according to the period they have been in the East Indies, as well as the relative number of Admissions and Deaths of each class.*

Class.	Strength.	Admitted.		Died.	
		Total Admitted.	Ratio per 1000	Total Died.	Ratio per 1000.
Under 1 Year	102	203	1990	6	58.8
1 to 2 Years . . .	410	800	1951	11	26.8
2 to 3 Years . . .	150	332	2213	2	13.3
3 to 4 Years . . .	2	1	500	"	"
4 to 5 Years . . .	17	20	1176	"	"
5 to 6 Years . . .	29	47	1620	"	"
6 to 7 Years . . .	40	51	1275	1	25.
7 to 17 Years . . .	297	423	1424	13	43.8
Total . .	1047	1877*	1792	33	31.5

* Accidents, &c., not peculiar to climate, not included in this Table.

No. 5. — *Abstract shewing the Diseases by which the mortality has been occasioned, and according as it has occurred in those above or under seven years service.—(Corrected.)*

	7 to 17 Years. Strength 297.		Under 7 Years. Strength, 750.	
Died of	Total Died.	Ratio per 1000.	Total Died.	Ratio per 1000.
Consumption	2	6.7	"	"
Cardiac Disease	1	3.4	"	"
Fever	2	6.7	8	10.7
Hepatic (Abscess)	5	16.8	3	4.
Stomach and Bowels	2	6.7	7	9.3
Brain	1	3.4	1	1.3
Other Diseases	"	"	1	1.3
Total	13	43.7	20	26.6

We have not given the ages in the last two tables, but if we take that of those who came out with the Regiment at 22 years on their arrival, and that of those who joined subsequently as recruits at 19 or 20, we shall have the ages as near as possible by adding the number of years in the country. The Queen's Royal have scarcely had ten volunteers altogether from other corps.

Though not immediately connected with the present subject, it may be interesting to exhibit the ratio of mortality by the same classes of diseases amongst the Officers, and more especially as our long service with the Regiment will enable us to do so with great correctness.

No. 6. — *Abstract shewing the Diseases by which the mortality amongst the Officers of the 2d or Queen's Royal Regiment, has been occasioned at the various Stations under the Bombay Presidency, from the 1st of June 1831, to the 31st of May 1842.*

	Died. (Corrected)	
Aggregate Strength about 407.	Total Died.	Ratio per 1000.
Diseases of the Lungs	"	"
——— of the Heart	2	4.9
Fevers	1	2.4
Hepatic (Abscess)*	7	17.2
Stomach and Bowels (Chronic Visceral)	1	2.4
Wounds and Accidents	6	14.7
All other Diseases	1	2.4
Total	18	44.

* Only one of these a sequel of Fever.

N. B. Only two deaths by disease, under 7 years residence, (Cardiac, &c. Hepatic).

CASES.

No. I. *Consumption.* — Serjeant Thomas Dunlop, ætat. 34. 17 years service; 16 in India. Of a phlegmatic temperament, and moderate frame. States that he generally enjoyed good health till on the late campaign in Affghanistan when he suffered much from pain in the chest, but as all did so more or less from the knapsack and cross belts, he did not give particular heed to it, Was in hospital at Cabul with a small abscess in the vicinity of the rectum. and has had a similar one here not yet healed. Towards the close of last autumn began to suffer from dyspnœa and cough, particularly in the morning.

In October felt something burst in his chest, and immediately after he expectorated about a gill of blood, which at the time afforded so much relief that he did not come to hospital, though the expectoration was tinged for some days after. Has been better and worse since, but almost constantly in hospital since March last, with pain in his chest, dyspnœa and cough, with a copious, thick, white expectoration. Aspect sickly; skin cool ; tongue clean ; bowels regular; pulse 84; respiration 28 to 30, abdominal. Irregular fever and occasional night sweats

Physical Signs. Considerable emaciation. Right subclavian region flattened; left more full and rounded, but deficient in resonance, particularly under 3d, 4th, and 5th, ribs. Respiratory murmur in both subscapular regions, and in right mammary and scapular, tolerably pure. From right clavicle to nipple mixed with sonorous and muco-crepitating rales, nearly choked with them under left clavicle, and lower down only a thin gurgling is audible. No bronchophony or pectoriloquy.

Diagnosis. Phthisis Pulmonalis. 28th August 1841. Invalided in September. Died at the depot Colaba, 28th January, 1842.

Autopsy, by Assistant Surgeon Dr. Barrington. Nine hours after death. Right lung of a greyish colour interspersed with dark lines, quite free from adhesion, and in every respect healthy. Left adhering to costal pleura, by means of a fleshlike membrane three or four lines in thickness. Excavations in every part, one at the inferior portion capable of containing an orange lined by a smooth semi-cartilaginous membrane, and containing thin purulent fluid. The entire lung studded with tubercles in different stages, and no part of it pervious to the air.

No. 2. — Serjeant Richard Bolter, ætat. 32. 17 years in service ; 16 in India. Of phlegmatic temperament, and tall bony frame. Was in hospital at Poona in 1835, with œdema of the feet and ankles and other slight dropsical symptoms, together with an excited action of the heart simulating hypertrophy, but afterwards enjoyed good health, he says (was mounted as provost Serjeant during the whole of late campaign in Scinde and Affghanistan) till November last, when on march up from Cambay to Deesa, with a detachment of recruits he was suddenly seized with hæmoptysis. Expectorated about 2 ozs. in all, but thought it was from his having been over exerting his voice. Did not come to hospital till May last, when he presented himself with his present ailments, dyspnœa aud cough, particularly at night or in the recumbent posture, with a pretty free muco-purulent expectoration, sometimes tinged with blood. Skin at present cool ; bowels regular ; pulse 72, moderate ; respiration 18, thoracic. No night sweats or other hectic symptoms.

Physical Signs.—Body generally, thin and attenuated ; chest narrow ; clavi-

cles and upper portion of sternum, prominent ; scapulæ flattened. Deficient resonance in right subclavian region, with high sonorous respiratory murmur; murmur less loud in left subclavian, scapular and axillary regions, but with mucous rale, particularly under 2nd rib anteriorly, where after coughing it becomes thin and subcrepitous or gurgling. Full, softer and pure (semi-puerile) in both mammary and subscapular regions. Bronchophony questionable in right axillary. Heart's sounds and impulse, normal.

Diagnosis, Chronic Pulmonary Catarrh of upper lobes. (Phthisical) Deesa, 10th September, 1841. Invalided, September, 1841 Died at Colaba, 16th February, 1842.

Autopsy by Assistant Surgeon, Dr. Barrington, 10 hours after death. Body much emaciated, face of a lurid hue. Larynx internally presented a large patch of ulceration, extending from, and implicating the, Glosso-Epiglottidean mucous folds. The rima glottidis, which was more patulous than natural, rigid and uneven. The posterior surface of the thyroid cartilage down to the attachment of the crico thyroid ligament, and the arytenoid cartilage of left side, ulcerated. Mucous lining of trachea and bronchial tubes, vascular. Lungs presented one mass of tubercles in their different stages of development, and an abscess of some size existed at the top of left lung. Ilio-cæcal valve and rectum also presented a few spots of ulceration.

Remarks. — Relative to these cases, it will be observed, on a review of the symptoms and physical signs, the diagnosis lay between chronic pulmonary catarrh or bronchitis, and phthisis tuberculariis. The fact is, both were present, but with regard to the first case, we inferred also the latter disease from the hectic symptoms. The chief diagnostic in both, however, was the bronchitis being nearly confined to the upper lobes. The gurgling rales might have been in consequence of its complication with dilated tubes. We had not then seen the excellent "Treatise on the diagnosis and treatment of diseases of the chest," by Dr. Stokes of Dublin, or we should have had no difficulty. It was quite evident, they were not ordinary cases of phthisis. But the chief point we would draw attention to in the first case, is the comparative flattening in right subclavian region, the dulness on percussion and tubercular disease in left. Dr. Stokes explains this when he says, in speaking of chronic tubercular development, "these cases too being almost of long duration, dilatation of the air cells often occurs." This we apply of course only to the conformation of the chest, the dulness may be explained by the subsequent disorganization of the lung. With regard to the right having been found quite healthy, we think it will be admitted there was a chronic bronchitis of the upper lobe when the case was taken. There was no dulness in the subclavian region and therefore we may infer there was nothing else at that time. It is curious, however, that it did not afterwards become tubercular. This we certainly expected.

Before dismissing this subject we would advert to a species of tubercular disease by no means rare, particularly amongst young soldiers. It is masked under symptoms of dysentery, and from the frequency of that disease in India is constantly mistaken for it. The dysentery acts as a revulsive, for with care little change will sometimes be observed for a whole year. They are apt to be cut off however, in the rainy season, by diarrhœa or dysentery, under which they are included in the official returns.

Cardiac and Aortic Disease.—No. 1.—Private Peter Daly, ætat. 32; 16 years service; 14 in India. Of a choleric temperament, and moderate frame. Has been acting mess Serjeant for the last two years. States that, with the exception of five days last hot season with the fever then prevalent, he has scarcely been in hospital since he came to the country, but that during the last two months he has suffered much from dyspnœa and palpitation on exertion as in running from the mess-house to the gate, from the former to such a degree as to take away for a time the power of speech. In every other respect enjoys the best of health. Face and lips much paler than formerly; skin cool; pulse 120, small, but firm.

Physical Signs. Condition inclined to corpulency. Chest well formed, but with a visible tremor in cardiac region. Respiration high, full and sharp. Deficient resonance over lower half of sternum, and left 4th, 5th, and 6th, cartilages, the two latter to line of nipple. Heart's impulse strong and heaving over all the cardiac region, but strongest much at sternal junctions of 4th, and 5th, cartilages or under the sternum. Systolic sound masked by a rather prolonged sawing murmur, sharpest about middle of sternum. Diastolic dull, slight double bellows under upper portion of sternum, but none over the clavicles.

Diagnosis. Hypertrophy with dilatation of right ventricle, and probably also of the auricle, moderate hypertrophy with contraction of left. No aortic or valvular disease.

Prognosis. Death within six months. Deesa, 27th February, 1841. Died at Colaba, Bombay, 30th April, 1841.

Autopsy by Assistant Surgeon Dr. Barrington, 6 hours after death. About two pints of dark coloured fluid on each side of chest. Lungs except a small portion of right lower lobe free of disease, — here there was considerable sanguineous congestion. Pericardium contained a few ounces of limpid serum. The parietes of both ventricles of the heart, but most particularly the left, in a hypertrophous state, with corresponding enlargement of the cavities. The heart weighed 21½ ozs., more than twice the weight of that of a large man. The similunar valves were ossified, the aortic orifice much enlarged, and the ascending portion of the arch dilated to nearly twice the natural size, without apparent disease of the coats, further than a slight puckering of the lining membrane. Liver enlarged, and of an unhealthy brown color. From the serous membranes of the intestines, a dark colored effusion to the amount of three or four pints.

No. 2.—Private Michael Dunovan, ætat. 20. 2 years service; 1 in India. Of a melancholic temperament, and slender frame. Admitted 11th February 1841, complaining of dyspnœa on exertion, as at Light Infantry Drill, palpitation, oppression at chest, and occasionally cough, of some months duration.

Also of a pain in right ear, which he reported to have come on the previous evening on parade, at the time he thought from the awkward pressure of his cap. His skin was cool; pulse 92, comparatively small and indistinct at left wrist. Heart's sounds were extensively audible, and respiratory murmur low and rough, but without rale.

Has been twice bled to the extent of 8 ozs., and has been taking saline and other cathartics, and now feels so well that he wishes to return to his duty; makes no mention of the pain in his ear, but when the pulse rises to 100 or upwards, which it sometimes does during the heat of the day, he experiences an acute throbbing in his forehead and ears. Skin always cool; pulse at present 72, not very well sustained, and comparatively small at left wrist.*

Physical signs. Condition healthy. Chest well formed, and without deficiency of resonance, except along 4th left cartilage towards the nipple. Respiration low over all the chest, but on forced respiration markedly highest in left subclavian region, Impulse of heart always plus, moderately when circulation is calm, but strong and abrupt, up and down, when accelerated. Second or diastolic sound loud and large under left clavicle. Very distinct and sharp under right. Systolic not audible under right, and scarcely under left. In cardiac region both are loud and abrupt. No bellows murmurs.

Diagnosis. Moderate hypertrophy by increased, extent (of the parietes) of left ventricle. No aortic or valvular disease.

Prognosis. With care will ultimately do well. Deesa, 3d March, 1841. Died rather suddenly, 5th April, 1842.

Autopsy. 6 hours after death. Head, nothing remarkable; heart fully half as large again as closed fist of subject, a little broad at apex, but the right ventricle apparently the broadest and largest. Parietes of left ventricle, at thickest part, 7-8ths of an inch. Right at base, 5-8ths or 6-8ths but elsewhere not more than 2-8ths or 3-8ths. Muscular cords strongly developed. A good deal of fat upon the organ externally. No other particular morbid appearance.

No. 3. Private William Sulton, ætat. 43; 10 years service, 9 in India. Of a melancholic temperament, and small slender frame. Joined the Regiment, as Master Tailor, but was soon after reduced to the ranks for intemperance. Was through the campaign in Scinde and Affghanistan as a Private, but has again been acting Master Tailor since his return in 1840. Admitted at 4 A. M. of the 8th of May 1842, with great oppression at chest, dyspnœa and a bloody frothy serous expectoration. Had seldom or never been in hospital, but his comrades say he had not been well for a long time previously. Felt very unwell the evening before admission, but as a detachment of recruits was expected next day, did not like to come to hospital. Became suddenly worse at 3 A. M. and died at ½ past 4.

Autopsy.—Noon. Frothy serum issuing from the mouth. Lungs rather expanded beyond the bounds of the thoracic cavity, and their tissue gorged with bloody frothy serum, which flowed copiously every where from their cut surface. The parenchyma was not broken down, but in the upper lobes were several irregular hernial like protrusions through the pleura pulmonalis, one or two the size of a walnut, evidently containing fluid held in by a thin transpa-

* The left radial artery divided two inches above the wrist, and only the smallest branch followed the usual course.

rent membrane, which when cut gave exit to a stream of the bloody serum ; 6 or 8 ozs., of serum also in either pleural sac.

Heart twice the size of the closed fist of the subject, and apex blunted. Left ventricle at thickest part, one inch in thickness. Right, soft and flabby, 2-8ths to 3-8ths. Base of aorta, thick, irregular and gritty, with calcareous deposition in sub-serous tissue. Semilunar valves and ascending aorta, generally, more or less irregular and cartilaginous. Blood also flowed freely from liver when cut. Deesa, 8th May, 1842.

Remarks. — With reference to the first of these cases we may observe the apparent greater hypertrophy of the left ventricle probably in some measure depended on the natural greater thickness of its parietes (nearly as three to one) and hence the necessity in all such caces of exact measurement. The hypertrophy with dilatation of the right ventricle was inferred from the extensive dullness and strength of the impulse under the sternum, together with the degree of dyspnœa on exertion. The hypertrophy with contraction of left, from the impulse in that region and moderate volume of the pulse. " No valvular or aortic disease," probably because we supposed the distress of the respiration and the murmurs indicative of these, were sufficiently accounted for by the disease of the ventricles alone. Compare our former cases, and particularly with the 2d of these. We are strongly inclined to believe also from the rapidity of the pulse, the prolonged sawing was referred to, the systolic *instead* of the diastolic sound in the first instance. This last, as far as our observation goes, is always associated with disease of the base of aorta or valves: — See our cases every where.

None of the above it will be observed, could in any way be traced to rheumatism, the supposed fertile source of these affections. The first would seem to have been brought on by a change of life from activity to luxury and sloth. The second we would ascribe to an originally disproportioned organ, which in ordinary life in a cold climate, might never have been discovered, but which the feeding, the duties and tight dress of a soldier excited to hypertrophy with dilatation. Our prognosis in this was falsified by the result, but as it is difficult to persuade a person to submit to the necessary regimen in this disease, and as he was extremely anxious to return to his duty whenever he got a little well, we were prevailed upon to gratify him, thinking it would at least prove his unfitness and prepare the way, he being a young soldier, for his final discharge from the service. In the cold weather he got on much better than could have been expected, at least, he managed to keep out of hospital, but on the 1st of April he was again admitted and died on the 5th; rather unexpectedly, as he had not been noticed to be worse than formerly. He had been bled that morning

I believe to the extent of twelve or sixteen ounces, and at least, once before for the relief of the palpitation, &c.

The third may be ascribed to a similar cause, at least this man had always a cold badly nourished appearance, though scarcely ever in hospital. He entered the service late in life, and from his previous habits must have felt the knapsack and cross belts very much during the campaign in Scinde and Affghanistan though he did not complain. Had he continued as a private, no doubt he would have been compelled to have to come to hospital at a much earlier period, though from the state of the aorta and valves there is little probability that his life could have been prolonged more than a few months. This combination of cardiac with aortic disease we invariably meet with in old soldiers, indeed after thirty years of age, and in these it runs generally a very rapid course. In the young, particularly under eighteen or twenty, the same degree of disease apparently is borne for years, though of course all tend ultimately to the same result. The above case shows indeed what a state of disease in these organs may exist with little suffering, comparatively, so long as the habits of life are passive.

It would seem also to have demonstrated the proper investing membrane of the lungs, (see autopsy) independent of the pleura, as described by Dr. Stokes of Dublin.

Mrs. Kennedy 2nd or Queen's Royal Regiment, ætat 19. ; 11 months in India. Of a melancholic temperament, and small slender frame. Admitted 9th June 1842, complaining of stuffing and smothering in her chest with palpitation and a catching pain under lower portion of sternum, on inspiration, shooting up to her left shoulder and back of her neck, which she reports to be of only three weeks standing, though she admits she had the beating when in hospital in March last.

States that she always enjoyed good health previously to her arrival in India, and never had any thing the matter with her chest. Had the fever in Bombay last rains, and again the greater part of the way up to Deesa, and very often since. Has since admission been bled three times, in all to thirty-six ounces, and with very great relief.* Can now lie down, which she could not previously. Skin cool ; tongue clean ; bowels active ; pulse 116, quick, and tolerably sustained ; respiration 34, abdominal and thoracic.

Physical Signs. General condition tolerable. Very extensive dulness in cardiac region and both sounds of the heart masked by sharp sawing murmurs, most superficial or loud under sternal junction of 4th and 5th left cartilages and under the sternum, the diastolic loudest and much prolonged. Systolic under upper portion of sternum pure and dull. Diastolic still with

* Here we would again urge the necessity of extreme caution in the use of this remedy in these affections, we continually meet with cases simulating organic disease from depletion and fever alone.

sharp sawing murmur. Both pure under left clavicle, not audible under right near the shoulder, and only slight bellows above. Impulse in cardiac region not heaving. Respiration puerile.

Diagnosis. Morbid state of the base of the aorta and valves, the former dilated and cartilaginous; arch healthy. Hypertrophy with dilatation also at least, of left ventricle.

Prognosis. Life very uncertain. Death within six months, preceded most probably by Hœmoptysis.

Remarks.—This patient is since dead after a very short illness, but whether from this and fever or cholera we do not know. The case is introduced because it is the first we have met with in the female sex, and though there is no post mortem report, because the diagnosis may be considered *substantially* as equally correct, there can only be error in the details; that is, the base of the aorta and not the valves may have been the seat of the disease or vice versa; or the right ventricle may have been affected as well as the left, or in some degree both auricles and ventricles.

To explain, we divide the evidence deducible from the physical signs into three kinds or degrees. In the first, they do not contradict the symptoms merely, and so furnish a negative evidence in their support. In the 2nd, they are positive of their kind, but as they may depend on different diseases, they require the symptoms to compare, whereas in the 3d, to which the above belongs, they are conclusive of themselves. In these, however, we go farther, and attempt to anticipate the Necrological report.

Aneurism of the Abdominal Aorta.— Private Charles Floyd, ætat. 43. A gardener, 20 years service, 16 in India. Of a melancholic temperament, and rather slender frame. Admitted 21st August 1842. Complains of pain in epigastric and left hypochondriac regions, with a dead feeling of weight at the pit of the stomach. Skin cool; tongue clean; bowels regular; pulse 72, rather small. States that he first began to suffer from pain across his loins in Scinde in 1839, and from his present ailments soon after his arrival at Deesa in 1840. Was in hospital with the former a short time ago, and frequently of late it appears with "bowel complaints."

Physical Signs. Condition rather thin. Resonance of chest, cardiac and hepatic regions, normal. Fulness in epigastrium with circumscribed hardness and fleshy dulness on percussion, evidently from a pulsating tumor (on palpiatation) something of the size and shape of a child's head. Friction sound, and a very loud forcible filing, the last synchronous with the pulse, and loudest near the centre and left, a little mesial to left cartilaginous border. Not audible in left hypochondrium, nor any where away from tumor. Strong forcible heaving impulse communicated by the stethoscope from the tumor in all directions.

Diagnosis. Aneurism of the abdominal aorta.

Prognosis,—Sudden death within three months. Deesa, 1st September, 1842. September 2d.—Complains to-day of pain across the loins. Purring tremor

very perceptible close to left cartilaginous border, where morbid murmur is loudest. Murmur itself double at this part, the first abrupt harsh and rasping or filing, the second filing and musical, but only over a space one or two inches in diameter.

There is also a hard tumor in left ham, the size of an egg which disappears on raising the limb above the level of the body and pressure. This also he first noticed about two years ago. Knows no cause. Has always been a healthy man. Never had rheumatism, venereal, or been salivated.

For the following we are indebted to Dr. Stone, H. M.'s 14th Light Dragoons, in medical charge of H. M.'s depot, Colaba.

December 24th.—Yesterday at 7 P. M., when at the close stool, he felt something in the abdomen give way, followed by a sensation as of boiling lead trickling down towards left thigh, and faintness. Soon became insensible, and died at 10 P. M.

Autopsy, 10 A. M.— Head, not examined. Thorax, all the viscera healthy. Abdomen, on laying aside the integuments nothing remarkable was observed. The stomach, bowels, liver and spleen, having been removed, a large bloody membranous mass occupied the left lateral and lumbar regions which on being separated from the aorta, the latter was found expanded all round into a cavity 6 inches by 3 or 4, having its inner membrane thick, white, and irregular, the origin of the cœliac artery about its centre. When separated from the body this cavity presented two solutions of continuity, the one large irregular and ragged, corresponding with the three last dorsal vertebræ which were deeply eroded, the other with the anterior and left lateral aspect of the tumor and nearly opposite to the origin of the cœliac artery. A little bloody serum in the general cavity. Left kidney enveloped in the bloody mass, but not perceptibly reduced in size.

In the left ham was found a tumor the size of a walnut, on rather perhaps a cyst filled with a pale yellow thick gelatinous fluid. This was the tumor in the ham suspected also to have been aneurismal, though we had failed to prove it by means of the stethoscope. The circumstances favoring that view were so strong that we were inclined to distrust the negative evidence afforded by the absence of the usual signs.

We have elsewhere adverted to the difficulty often experienced in detecting aneurismal tumors in the abdominal cavity with certainty, even with the aid of the stethoscope. The above case is an exception however to the latter part of the rule, but this we attribute to the succulated aneurism into which the true seems to have opened in the region of the morbid murmurs and purring tremor. See case, Physical signs.

The cause of this difficulty we ascribe to the dull fleshiness of all the surrounding parts, and the want of a proper rest for the stethoscope, without pressing upon the artery. We have ourselves been deceived both ways where the signs were equivocal, but in a case like the above of course he who ran might read. To the pure symptomatologist however, insuperable difficulties would have presented themselves, which only death and a post mortem examination could have removed. To the symptomatologist and stethoscopist combined, certainty itself could not have been more sure.

Febris Remittens, Gastro Hepatic and Pulmonary 1542 May 8th, Private James Cottis, ætat 21, 3 years service, 2 in India. Of a melancholic tempe-

rament, and rather slender frame. Admitted last evening in the hot stage of fever, accompanied with nausea and acute catching pain at the epigastrium checking his breathing. Skin hot; bowels moved; pulse 130. Epigastrium tender, had a purgative on admission followed by the Solut. Sulph. Magnes. V. S. ad ℥xii. Cont. Solut. *Vesp.* Pil. Hyd. gr. x. c. Opii. gr i. hs. Mist. Salin. c. Nitrat. Potass. 3 qq. hora.

9th.—Acute catching pain in right iliac region with tenderness on percussion. Skin still hot; pulse 96; Hirud. et fotus p. d. Rept. Pil. Hyd. Opii. et meridie habt. Ol. Ricini ℥vi. c Tinct. Opii. m. x. Cont. Mist. Salin.

10th.— Fever all yesterday. Pain now shifted up to right subclavian region; iliac and along in front of cartilaginous border, full and tense, resonance plus gastric. Skin of extremities cool, of body hot; tongue loaded; bowels open; pulse 100. Had the blue pill and opium again at bed time Ol. Ricini ℥i. c. Tinct. Opii. m. x. Cont. Mist. Salin. c. Nitrat. Potass. Sulph. Quinine gr. ii. 2da qq. hora. *Vespere* Enema domestic. Rept. Pil. Hyd. et Opium.

11th.—Feels easier when lying quiet. Pain now referred to the hypochondrium, with dulness on percussion from cartilaginous border to near the nipple. (Was in hospital last year at this time with hepatitis and dysentery.) Abdomen hot; extremities cool; bowels open; pulse 96. Hirudines et fotus hypochond. Rept. Med. ut heri. (I was now laid up with fever, and did not see him again till) May 19th. Feels quite easy, only weak. Skin pretty cool; tongue covered with a dark moist load; bowels active, pulse 96; hepatic dulness from nipple to an inch in front of cartilaginous border, and from apex of right scapula downwards, with crepitating rales over all that subscapular region, and round superiorly to nipple. No vocal resonance.

23th.—Feels quite easy. Skin cool; pulse 124. Dulness on percussion now extending above the nipple, with a moaning and piping rale for an inch or so above the dull region, in both lateral and mammary, with an occasional crepitating in lower interscapular region. Murmur extinct in subscapular, and sound on percussion quite dead. Blue superficial veins meandering down over the the right hypochondrium. Abdomen tense and semi-tympanitic.

June 1st. — Hypochondrium becoming very full and rounded. Dulness on percussion from 3d rib to two inches in front of cartilaginous border. Skin warm; pulse 108. Respiration puerile in left chest anteriorly. Comparatively low but pure under right clavicle. 5th. Died at 8 A. M.

Autopsy. Noon.—The right lobe of the liver and lower lobe of the right lung occupied by an immense abscess filled with a thin greenish matter. The cavity was lined with a cyst, and no traces of vessels were observable except two or three short fleshy looking shreds. The lower lobe of the lung had been completely removed, and the lower part of the middle ulcerated off nearly horizontally across leaving a thin web on the sac anteriorly. Laterally the pleura adhering to the parietes seemed itself to be the sac. Lung for an inch above this, dark red and congested. Caecal valve and six inches of colon, thickly set with large circular ulcers having thickened edges. Left lobe of liver, straw colored.

Remarks. — It would appear that on admission, in addition to the remitting fever at that time very prevalent, there was in this case an old latent enteritis and hepatitis which were roused by it into activity, and

that the removal of the lung by ulceration was the effect of hepatic abscess.

It may be thought curious, however, that the abscess should have progressed so far without bursting through the bronchial tubes; but from what we have observed this is really a much more rare occurrence than is generally supposed by non-stethoscopists. We were first led to this by our anxiety to trace a case this way by the anscultatory phenomena. We have seen several take this course, whether from the substance of the liver or beginning between its peritorineal coat and the diaphragm, but not one can we say, that has actually burst through the lung. The muco-purulent discharges mixed with blood which in some cases are copiously expectorated, come from the lungs or bronchial tubes themselves generally from a progessing pneumonia and bronchitis. *

Indeed, comparing these with the contents of the abscess afterwards, is fully demonstrative of this. But we have seen the same in a case of lumber or psoas abscess, which had risen up behind the pleura *without penetrating* it.

We were at a loss at first in the above case on detecting the crepitating rales, &c., to determine whether the disease of the lung, was itself a primary complication, or only consequent upon a hepatic abscess, but the absence of vocal resonance, and afterwards the extinction of the respiratory murmur with the belt of crepitating rales surmounting the dull region, and progressing upwards, were quite conclusive. Dr. Barrow, Queen's Royal, had noticed the anscultatory phenomena the day previous, but having had the whole of the hospital duty at the time on his hands, had not particularly adverted to them.

There would of course have been no difficulty, had we made certain of the state of that portion of the lung on admission. We were only led to it by the ascent of the hepatic dulness, and crepitating rales under the nipple.

Deesa, 23d June, 1842.

Case of Snake bite.—M. A. W. ætat. 15. A rather delicate girl, of a melancholic temperament. Admitted last evening having been bitten by a snake supposed to be the common species found there in all the compounds during the monsoon) which she had accidentally trampled upon. There are three dark spots on the outer dorsal aspect of left foot near the instep, which are said to be the wounds made with the teeth and burnt with lunar caustic twenty minutes or so after the accident. The foot and ankle are hard, swelled, and of a pale shining color mixed with livid. Leg and knee also swelled. Has been expectorating small quantities of grumous blood since midnight. Respiratory

* Or do the bronchial membranes take on a vicarious action?

murmur pure and equal. Took some coffee this morning which excited vomiting. Seems quite easy and makes no complaint.

Noon.—Swelling of leg and knee increased with some increase of temperature; grumous expectoration moderate.

Evening.—There has been a slight oozng of blood from the wounds. Leg more swelled. Circulation and temperature generally, moderate. Expectoration still mixed with grumous blood.

24th.—Foot and ankle hard and more livid. Hardness and lividity also of leg. A large livid patch or ecchymosis in ham. Petechial spots and vibices also on arms and hands. The leg, foot, and ham, now exactly resemble purpura or dry scurvy common in Colaba, Bombay. Gums have also been bleeding a little Makes still little complaint.

Noon.— Grumous expectoration still very moderate. A large vibex now near the stomach. Petechiæ on right leg and foot. Former patches increasing in size and darkness. Occasional vomiting.

Evening.—No vomiting. Hæmoptysis, trifling. Spots and vibices darker, but swelling and hardness not increased. Several spots about *the right* foot and ankle, and smaller ones on the back of hands and on the forearms. One rather large vibex on left forearm, and an old bruize-like patch on the other. Skin cool; pulse 112.

25th.—Fainted in the night, and is still pale and weak. Ecchymosis on left forearm paler. Two or three petechial spots on the face. Hæmoptysis continues and oozing from the bites. Skin cool; pulse 120. The leg is at present about twice its natural size and of a pale livid color mixed with darker patches about the foot.

Evening.—Again great tendency to syncope since 3 P. M. Swelling, &c. much as before, pulse 134.

26th.—No hæmoptysis since yesterday, but very thirsty all night, pulse 120. Swelling, vibices, and ecchymosis in ham, darker.

Evening.— Ecchymosis in ham still very dark, but leg generally becoming of a straw color. Foot livid, tense and warm. Spots on feet and arms fading. Skin cool; pulse 136, quick and rather hard. 27th. Leg much softer and considerably fallen. Blackness in ham changed into straw color. Leg also and foot straw colored. Spots fading. Those on face gone. Pain over the coronal suture all night. Skin cool; pulse 120. Convalescent.

N. B.—This csse was assiduously treated by Dr. Jopp, Queen's Royal, with ammonia, camphor and opium, wine, beer, &c.

Article IV.

Portion of the Annual Report of the 1st Troop Bombay Horse Artillery, embracing the first eleven months of the year 1841. By A. H. Leith, A. M.

Presented by the Medical Board, June, 1842

From the commencement of the year up to this time the Troop has continued in tents, and it has been subjected to considerable changes of climate. In the beginning of the year we were encamped in the vicinity of Shikarpoor, from thence we marched on the 14th January, and between Khanghur and Munyotee crossed the desert which lies at the southern end of Kuchee; we continued our march by Shahpoor and Chachur to the neighbourhood of Bhag. This small town is on the Naree river, the most considerable of the five streams that water Kuchee, and it is nearly in the middle of the plain, being about thirty miles from the Brahooee mountains, between thirty and forty from those of the Murrees, and about forty miles from the desert which lies to the southward, and the same distance from the hills which bound the plain to the northward. The soil of the plain is for the most part alluvial, there are some spots however, as at Shahpoor, where the alluvium is covered to some depth by silicious sand. In the neighbourhood of water it appears rich, and there, when uncultivated, it is covered with underwood or small trees of acaciæ, zizyphus, capparis, &c. and near the streams tamarisk, asclepias gigantea and oleander abound. Again there are extensive tracts, which from want of water, bear only salsola or capparis, or which are in appearance perfectly bare of vegetation, yet in the midst of such bareness and aridity, flights of pterocles are seen; many such tracts have evident marks of former cultivation and in the midst of them are the remains of villages. The present desolation has been in those cases caused by the supply of water having been diverted to the cultivation of the fields of some more powerful tribe. The soil appears to be impregnated with a considerable quantity of soluble saline matter, for the edges of streams are often incrusted with it, and the water of wells which remain long undrawn, becomes brackish and unfit for use. At Khan-

ghur, on the edge of the desert, I found a well in the fort to be so, it contained as much as 6.5 per cent. of saline matter, and the water in the large pukka well at Rojan is generally found to be brackish and purgative, but is more especially so in the hot months, at which season there are fewest travellers and evaporation is most rapid. I had some of the water from the latter well sent to me for examination, but from its having been much drawn just before, I did not find more than the trifling admixture of saline matter that well water usually contains. The small kucha wells at Rojan from which the villagers draw their drinking water, and which are continually being exhausted, yield sweet water.

The mountains on either side of the plain appear to be of limestone, and to the northward the first ridge is of sandstone and claystone, and the next of calcareous conglomerate, beyond which, ridges of different limestones rise in succession. Near Shoran there are sulphur mines, and from thence, along with specimens of the sulphur, I received some alum and a bottle of water very highly impregnated with iron.

In the month of February we marched again and accompanied a portion of the force to the N. E. extremity of the plain. This part of the country we found to be highly cultivated, the greater part of the water of the Naree river being consumed in the irrigation of the lands of the warlike Patans here located; indeed the villagers in the course of the Naree below Mitree, are chiefly or wholly indebted to the floods which follow heavy rain for filling their canals and the tanks that they form by throwing bunds across the channel of the river.

On the 20th February the village of Khujuk was attacked by our detachment, and owing to particular circumstances, a part of this Troop was engaged in the assault and consequently the casualties in it were numerous, being in all one officer and five men killed, and one officer and six men wounded, and also two followers wounded. After halting for a month at Khujuk, we marched to Dadur which is near the mouth of the Bolan Pass, in a well irrigated spot producing jowaree, barley, wheat, cotton and indigo. It is in some measure separated from the rest of the plain by the Nowshummun, a low ridge of hills of claystone with sandstone overlying it, which runs about W. S. W. and E. N. E. and its confined situation appears conducive to its overpowering heat during the season of the sun's greatest northward declination, for the heat at Bhag, which is in the open plain, although described as being intense, is allowed to be far more endurable and to be less unhealthy than that at Dadur.

In *January* we had severe cold during the nights and mornings; on the

morning the Troop marched from Shikarpoor, the thermometer fell to 25° Fahr., and the water in the canteens carried by the men was frozen. In *February* the weather became milder, and in the last week of that month we had heavy rain. *March* was agreeable in temperature. In the beginning of April at Dadur the weather rapidly increased in heat and became close and disagreeable. The wind up to the middle of March was generally light and from the N. or N. W. after that time it blew stronger, and at the end of March and beginning of April, a strong S. W. wind prevailed and was accompanied with dust. Up to this time the admissions into hospital were very few, being, with the exception of wounds and accidents, but fourteen during the whole three months: the total number was 23.

After a halt of about three weeks at Dadur, on the 7th April we began to ascend the Bolan Pass to Khorasan. Having passed through the first ranges of hill of sandstone, claystone and calcareous conglomerate, from Kundye we continued to ascend the bed of the stream, our only road, through the Tung-i-Guttee, a chasm of nearly two miles in length in a compact white limestone, whose fossils are cephalopoda (chiefly spherulucea) and corals; this rock is cavernous and also very much and minutely fissured. The valley then became wider and disclosed in its precipitous sides a greenish blue shale under limestone. A little below Kirta the only habitation of man seen in the Pass, from the abrupt termination of the mountain ridge on our left, the valley suddenly opened out much more. We encamped in the Kirta plain at Gurm Ab, where a warm spring rises out of the nearly level ground; the temperature of the spring I found to be 82° Fahr. After passing Beebeenance we came to Ab-i-goom where, as the name indicates, the Bolan stream is lost in the shingle. Ab-i-goom is in the centre of a basin more than half encircled by lofty mountains of a purplish-grey limestone, abounding in encrinites, cephalopodous mollusca &c. and open towards the S. E., and it is in the midst of rocks of the coal formation, which extend in every direction for several miles and are then lost under a thick deposit of recent and imperfectly solidified conglomerate of rolled limestone, that reaches to the bases of the surrounding mountains, the strata of which dip under it. The beds of this coal formation have been much and to various extents upheaved. In a mural cliff on one side of the bed of the stream in which our road lay, there were disclosed seams of coal inclined from 60° to 70°: in this cliff were the best specimens of coal that I could find in a superficial search in a circuit of several miles, and here it existed in quantity by far too small to render it of any value, for 660 feet of rock contained but an aggregate of

4 feet of coal and this small quantity was distributed in seams varying from 3 to 9 inches in thickness; in quality it was rather inferior; even were the coal on search found to be abundant in this district, its locality at a distance from any supply of labourers and offering such obstacles to transport, in the state of the road and want of forage, must preclude any advantage being derived from it. A loose bluish clay shale, in which I could find no vegetable impressions, alternates with the carbonaceous seams and limestone and a little calcareous sandstone; the shale contains talc and gypsum. At Sir-i-Bolan from the foot of a mountain, a large stream gushes out, the temperature of which I found to be 70° Fahr. and in October, when we were descending the Pass, it was the same, but this is considerably above what the annual mean temperature of the air can be at that place and the stream issuing from a limestone mountain makes it the more likely to be a thermal spring. A little below * Sir-i-Bolan an adiantum of a species common in Khorasan was found growing, as is its habit, in the shade of an overhanging bank close to water; at Sir-i-Bolan the colocynth, which grows rather plentifully in Kuchee, is last seen, and a little above that place the acaciæ, capparis, asclepias, nerium and "puneerbund," disappear and are replaced by the pistacia, amygdalus, ficus (carica) daphne†, which are found in the long narrow and deep zigzag defile, through which at seasons the mountain torrent flows and which terminates the Pass at its upper end: an arboreous juniper (the J. Phœnicea) is abundant in some neighbouring ravines and attains a great size, one I measured was 8 feet in girth. On emerging from this defile by the Khur Lukkee, we entered on a plain covered with salsola and southernwood, and sprinkled at that season with the blossoms of bulbous plants among which was the tulip. This plain is without water and consequently unproductive, and it bears the appropriate name Dusht-i-bedowleh: from it we entered the valley of Shal, which likewise abounds with artemisia and salsola, and also with a peganum, a handsome sophora and a yellow flowered corymbiferous plant called mungoolee by Brahoos and gungoo by Patans, but I need not add to what I have already written in my Statistical Report on this valley.

On ascending the Pass, at Ab-i-goom we experienced a very sensible decrease of temperature and this became greater as we advanced. We arrived at Quetta about the middle of April and had for some time cold

* The elevation of Sir-i-Bolan above the level of the sea is estimated to be near 5000 feet.

† This daphne, which is called "peepul," by the natives of the country, appears to be the D. salicifolia. it is given by the hukeems as an emetic, the dose being two leaves rubbed up with water: its action is said to be powerful

and rainy weather: the neighbouring hills were still capped with snow. The temperature soon however increased, and it rose rapidly until the middle of June. In July the heat was more oppressive from the cloudy and hazy state of the atmosphere, and in August too it was sultry; this year the temperature far exceeded its usual height. In the beginning of September at full moon there was a sudden and great diminution of temperature, after this the daily mean of the thermometer fluctuated considerably, but it decreased rapidly although irregularly, and in the middle of October when we were at Sir-i-ab, at the head of the valley of Shal, on our return to Kuchee, the ponds in the mornings were frozen over and the thermometer, shaded from the sky, at sunrise was observed as low as 25.°5 Fahr. On descending the Bolan Pass we again came into a warmer atmosphere.

In *April*, the month in which we were subjected to the change from the climate of Kuchee to that of Khorasan, the number of admissons was 14 inclusive of surgical cases: in *May*, which was mild, there were 9 admissions: in *June*, *July* and *August* they were again more numerous, being for those months respectively 17, 16, and 13: in *September*, when miasmata became more powerful in operation, there were 24 admitted; in *October* 23, and at Dadur during 29 days in *November*, there were 25 admissions.

The number of admissions during the past eleven months has fallen far short of what the returns show to have taken place at Poona, the most favourable of our stations, in 1840 the most favourable year that we passed there, while the average strength of the Troop has been greater than it then was.

Medical Practice.

During the past eleven months there has been little variety in the forms of disease, and the classes "Bowel complaints" and "Fevers" embrace the bulk of the medical cases admitted.

Diarrhœa.—This complaint in Kuchee during the cold weather shewed itself in various degrees of severity, sometimes being mere relaxation of the bowels with thin feculent motions, at other times the flow of mucus was still more increased, and if this was allowed to go on, the mucus became tinged with blood and the disease merged into dysentery. In several instances it appeared to me that the prevalence of diarrhœa was increased by putrid carcases tainting the air with their effluvia and by their being allowed to lie in the streams furnishing the camp with water; thus at Korana, our first march from Khujuk towards Dadur, the Troop was encamped in the midst of putrid camels, no change was pe-

ceived to have taken place in the weather and the water was from the stream from which we had drunk for several weeks, yet many were here seized with looseness of the bowels. The treatment in this mucous variety of diarrhœa was usually a laxative followed perhaps by an anodyne.

In Shal (and I found it the same at Mustoong) the diarrhœa of the hot season was of a different nature and appeared to be consequent on a deficient secretion of bile, the causes of which I have entered fully into in my report on the Medical Statistics of Quetta before referred to.* The dejections were grey, whitish or quite white, and thin, feculent and frothy or semifluid, (in some rare cases where no diarrhœa existed the motions were formed and quite white): there were uneasiness and distention in the upper part of the abdomen in almost every case and especially after food. The state of the tongue varied, generally it was furred and foul at base, sometimes the papillæ were very slightly prominent and whitish, at other times the tongue was clean. Hæmorrhoids very commonly accompanied this state of the bowels, and there was occasionally tenderness when pressure was made over the gall bladder, probably from the existence of some distension of that viscus from retained bile. This state of the bowels if concealed by the sufferer, sometimes ended in dysentery, and sometimes in ulceration of the mucous membrane and enlargement of the mesenteric glands. The treatment which I found most useful was putting the patient on farinaceous diet with the finest bread and interdicting all solid animal food ; the exhibition of mild mercurials such as Hydrargyrum cum creta and Pilula Hydrargyri with alkalies and often with Fel bovis inspissatum and small quantities of Opium; in some cases I gave minute doses of Hydrargyri chloridum with Ipecacuan and Opium. When bile was again freely secreted and tinged the dejections, the diarrhœa soon ceased ; in some obstinate cases where tenderness in the region of the gall bladder existed, I thought good resulted from the application of blisters over it. But removal from the extremely dry air of Khorasan or of Kuchee to a moist climate, as that of the sea coast, or in the cold weather perhaps the banks of the Indus, offers a greater probability of recovery in obstinate cases than any course of medicine. At the time that this diarrhœa was prevalent, the hepatic secretion was abundant in fever cases and in these the usual emetic almost always brought up a quantity of bile, and it was by no means unfrequent that this form of diarrhœa was thus checked by the supervention of an attack of fever. In two cases that came under my care unconnected with the Troop and in one belonging to it, tenderness of the gums from the mercurial medicines was complained of while the motions con-

* Transactions, No. iv.

tinued whitish or white, in the last mentioned case the patient was attacked with fever and bile then began to flow.

Dysentery.—It sometimes followed diarrhœa and was subacute, and at other times it was sudden in its accession and sthenic in character : in some cases there was an increased flow of bile. The treatment has been nearly similar to what I have stated in former Reports, to the Ipecacuana however, either with or without blue pill, I have often added small quantities of Sodæ sesquicarbonas with great advantage, especially where the redundant bile caused scalding motions and was an additional source of irritation : in the severely inflammatory cases, I have also added small quantities of Potassæ nitras. The want of good leeches has been very much felt in the treatment of this complaint, cupping being not so well adapted to give relief. In illustration of the treatment of dysentery the case of Gunner Wm. Miller may be referred to. Two fatal cases of this disease have occured, one at Quetta in September in which death followed perforation of the cæcum by an ulcer, of which many of old standing were after death found to exist; this man had continued to perform his duty and never came under treatment until the final short attack : the other died at Dadur after many relapses. One has been sent to the coast for change of air.

Fevers.— During the cold weather instances occurred of fever complicated with congestion and inflammation of the lungs. Among the Europeans of the Troop there were two such, one at Shikarpoor and one at Quetta. Among the native followers the cases were more numerous. The case that occurred at Shikarpoor was in a man of intemperate habits, he had been two days ill in the lines and at the same time drinking hard, he came to Hospital the night before the Troop marched and died three or four days after, while we were crossing the desert. The diary of the case, as usual, was transmitted at the time. In the other case which was treated in the same manner, viz. by active depletion and the use of Tartar emetic the disease was subdued. At Quetta, cerebral congestion was a common concomitant of fever both on our first arrival and afterwards in the hot season ; exposure to the sun was in the latter case usually assignable as a cause. While detached on duty at Mustoong and in charge of the wing of H. M. 41st Regiment and the company of European Artillery there, I observed the same complication. Some of the cases treated in the Troop Hospital were of great severity. Both general and local bleeding were employed, but the latter was by far the more advantageous, and here again the want of leeches was felt, cupping was freely employed and in two cases the temporal artery was opened ; cold wet cloths were applied

to the shaven head and cold water was poured in small stream from a height on the head, or was thrown with force upon it by means of a large syringe every hour or two hours. The case of Gunner Simpson is illustrative of the complication. In September and October intermittents, apparently from endemic causes, became more numerous and often quinine failed to check the disease until venesection had been employed. In November also at Dadur, where the Troop is now encamped, the admissions for intermittent fever have been numerous.

Hepatitis. — The only four cases that have occurred during the year have been admitted in November since our return to Kuchee. All were men who had not before been in Hospital during the year, and two were staff Serjeants and therefore not liable to much exposure ; in one the disease of the liver is complicated with fever under which head the patient was admitted ; the fourth case is chronic. One of these patients when the hepatic inflammation had been subdued was attacked with dysentery and a change of climate being thought to offer the only prospect of ultimate recovery he was sent towards the coast.

Surgical Practice.

Retention of Urine. — A case was admitted and terminated fatally, but as I was at the time absent from the Troop I shall not enter into the particulars of it.

Incised Wounds. — After the attack on Khujuk there were three admissions, and in each case the wounds were numerous, each man having had to contend with many opponents at once. In one, besides two wounds in the right arm and one over the patella, a sword cut had dislocated the head of the left radius and broken the head of the ulna into fragments, laying the joint extensively open ; amputation of the arm by the double flap operation was performed $3\frac{1}{2}$ hours after the receipt of the injury. In another man, besides a small cut in the forearm, there were two severe wounds received simultaneously while in the act of using his sword, one was from a sword which divided the triceps extensor of the right arm about its middle, and raised a flap which terminated on one side in the axilla and on the other at the acromion process, the deltoid muscle also being divided : the other wound was from a battle axe ; it penetrated the right side of the chest under the scapula. The wounds were closed by the interrupted suture, adhesive straps and bandages. There was secondary hæmorrhage to a considerable extent from the humero-thoracic artery, which on the receipt of the wound too had bled freely, notwithstanding this, thoracic inflam-

mation had to be combated by some further depletion. His arm is disabled and he has been sent before the Invaliding Committee. The third man had a superficial cut on the back of the right shoulder and a more severe one on the outer side of the left arm, beginning a little below the elbow, extending upwards and raising a flap with a slice of bone from the humerus just above the outer condyle but not implicating the joint ; the piece of bone was removed and the wounds were closed by suture, adhesive straps and bandage ; he had also a small wound in the right check implicating the parotid gland, the scales of his helmet saved him from its being severer, the helmet also saved his head from another cut and this is not the only instance which occured that day where the helmet protected its wearer in the melée. This man tried to make the wound in his arm a plea for retiring from the service on a pension and a Medical Committee had to pronounce on his case when he refused to perform his duty : the unanimous opinion was that the wound caused no permanent disability. Wounds received in action are very often the occasion of men malingering with a view to being pensioned, and of this the Committees which we have had in the Field Force have afforded many proofs ; the utmost firmness in the medical officer is required to check this, but it is a disagreeable thing to have to behave with even but apparent harshness to a man who has been wounded in doing his duty in the day of battle.

The Gunshot wounds were all from matchlock balls and received at Khujuk ; two were very slight, one of a finger the other of the leg, and two were of the thigh, in one of these the sciatic nerve was wounded ; the man suffered much pain from the wound downwards to the toes but especially in the outside of the leg, there was also an intolerable burning sensation for sometime in the foot and toes, these were alleviated by opiates internally and the local application of cloths dipped in cold water. He can now walk with very little lameness when inclined to do so, and there is every prospect that he will soon be able to return to his duty. A Native Artificer on the same occasion was wounded in the leg by a matchlock ball which lodged near the head of the tibia and had to be cut out, and a Dhooleebearer received a ball in the right cheek which made its exit behind the left mastoid process of the occipital bone ; the man at first had difficulty in taking food, and liquids regurgitated through the wound in the cheek, but he soon got well.

Among the wounded of the enemy that we found in the village, I had some severe cases from *spherical case* and also from *musket shot wounds*.

In addition to the surgical cases among Natives which are mentioned above, there were the following.

Retention of urine with the urethra lacerated by the forcible attempt of an ignorant Hospital Assistant to pass a catheter; I punctured the bladder above the pubes with success.

Dislocation of the head of the humerus which took place in the man's raising a bundle to his head.

Dislocation of the elbow-joint in a horsekeeper received in falling.

Fracture of the femur from the kick of a horse.

Amputation of a finger in a horsekeeper on account of an injury.

Wound from a knife *of the palmar arch* in a Native of Kuchee of ten or twelve days standing, hæmorrhage continued and the blood still issued per saltum when the wound was uncovered; properly directed compression stopped the bleeding and the wound healed rapidly.

Sword wound, dividing the scapula and penetrating the chest; active depletion was requisite; the man recovered.

Dadur; 29*th November*, 1841.

Article V.

* *Reports on the Medical Statistics of Upper Scinde, drawn up by the Medical Officers serving with the Force under the command of* Brigadier England.

Presented by the Medical Board, November, 1842.

1

Report on the Climate of Quetta, during June, July, and August, 1841. By R.B. Owen, M. D. Surgeon, 3rd Light Cavalry.

I arrived at Quetta on or about the 17th May, 1841, in medical charge of the 3rd Regiment, Light Cavalry, and during my stay there (a period of about three months), I made daily remarks on the climate, temperature, &c. of the place; with other meteorological observations, which I hoped at a future time I might find useful, but having been robbed by the Kakurs, of a large amount of property while travelling through the Kutchlack Pass, and my portfolio with all my observations on these subjects, having been stolen at the same time, I can now offer little or nothing more than my opinion of the salubrity, or otherwise of the cantonment

* *Note by the Secretary.* These reports were drawn up in conformity to the subjoined memorandum, and of this series of Reports, the one by Mr. Leith on the Medical Statistics of Quetta, and that by Mr. Deas on the Climate of Dadur, were published in the last No. of the Society's Transactions, (No. iv). They are in consequence omitted now.

Memorandum for Medical Officers.

The Medical Officers of this force are to be called on by the Assistant Adjutant General to report, for the information of the Supreme Government of India, on all points regarding the Medical Statistics of their respective stations.

1. The climate generally as regards the troops.
2. The average number of Soldiers per cent. under medical treatment, during the worst months and during the best.
3. The seasons showing the best and worst for the troops, and whether the past season has been in any way a peculiar one.
4. The number of deaths during the last four months out of men.

during my short residence there, and this, be it remembered, I can do only from memory.

Two principal diseases soon became prominent for their severity, viz. bowel complaints of various forms, and fevers.

The bowel complaints among the natives admitted into Hospital, were some of them exceedingly severe, baffling every remedy, until in several cases it was found prudent to omit all medicines for a time; and as many of these cases remained in Hospital after I left the Regiment, I know not what the event proved: — the deaths during my time were very few. Indeed it was admitted by all, that the season at Quetta this year was one of unprecedented heat, the range of the thermometer was occasionally very great between the day, and the night. During the day time we had generally very high winds blowing from the westward, accompanied by clouds of dust, while at night-fall the wind veered to the eastward. The position of the camp was most open, and exposed to all vicissitudes, without the slightest protection, excepting what the tents afforded, and no doubt these constant vicissitudes would have a powerful influence on the native soldiers, and followers, who are generally so very indifferently clad: I had frequently to remark this circumstance, but could seldom find a remedy.

The most severe forms of dysentery were frequently accompanied by fever, and proved more obstinate; accordingly I was myself the subject of bowel complaint several times, while at Quetta. I suspected the water had caused it, and from the obstinacy of the disease among the natives in Hospital, I was induced to conclude that some of the water in the neighbourhood must have had pernicious qualities, and had a great influence on the health of the patients, as in such obstinate cases I kept a most vigilant watch over them, and was convinced that I could discover in no single instance that these people had been indulging in crude vegetables, or fruit of any kind.

5. The sort of accommodation which the troops have had, and specifying how far sickness has been influenced thereby.

6. The particular months during which each station is most unhealthy, and the causes.

7. The unwholesomeness, generally of particular places.

8. The Medical officers are to be directed to make these documents as complete as possible, and to offer such suggestions, as to clothing, &c. with a view to remedy the evils discovered, as may be most likely to lead to the attainment of that desirable object.

By order (Signed) W. Wyllie,
Major A. A. A. General Scinde Force

Camp, Quetta, 6th September, 1841.

Taking then into consideration all that our short experience of Quetta and its neighbourhood has shown, I should be inclined to conclude that its climate and other causes have proved it most pernicious to the health both of Europeans and natives, as numbers have had their constitutions dreadfully broken up, the effects of which they may never recover.

In my official letter, dated Shereewab, I explained the impossibility of my being able to make out any regular report of the climate of Quetta, and I have now only to repeat, that I have no other means than from memory, which I must urge as an excuse for the extreme poverty of those remarks, and the information I possess on the subject.

Kelat, 3rd October, 1841.

2

Statistical Report on the encampment, Head Quarters Scinde Force at Quetta. By J. Patch, Esq. Surgeon 21st N. I. and Superintending Surgeon S. P.

The ground on which the Head Quarters of the Scinde Force are at present pitched, is a gradual slope of considerable extent, being one of the vallies formed by the divergents of rocky mountainous ranges at the top of the Bolan Pass, about 49 miles from it, and in about 30 north latitude, and 66° 50′ east longitude, the elevation above the sea is upwards of 5000 feet; none of these ranges appoach nearer the camp than 4 or 5 miles, generally they are at a much greater distance and are between 2 and 3000 feet in height.

The camp is very considerably elevated above the town of Quetta, distant something more than a mile in a south-westerly direction, and a spot occupied by the political agency where are also situated the ordnance stores, and the projected lines of the 20th Regiment, N. I. The whole of this latter locality is, as far as can be judged by the eye, the lowest spot in the neighbourhood. A stream of water issues at a gorge in the north-eastern corner of the valley, and supplies the whole of the slope with water in moderate quantity and of a very tolerable quality. The soil is a light coloured alluvial deposit, mixed with calcareous and silicious matter, and very much made up of stones rolled and rounded by the action of water.

This ground on our arrival in the early part of April was partially covered with wild flowers, and tufts of southernwood, but since the hot weather scarcely a trace of vegetation remains. Cultivation is not very abun-

dant. In April the wheat was beginning to get into ear, and it was cut in July. More miasma may probably be generated by the quantity of lucerne grown, than by any other kind of cultivation. Having only been here a little more than five months, I can but speak of the climate during that time.

During the whole month of April, the prevalent wind was from a little to the northward of west, with a good deal of rain, and in cold weather, snow remained on the loftier mountain tops until very late in the season, and it was to be found in some of the crevices, even in the month of July.

In the month of May a great change of temperature took place, which in the latter part became rapid, and I look upon the sudden change then, and generally speaking the changeableness of the climate as being very prejudicial to health. All June, July, and August, were very hot, although not perhaps very oppressive. Solar radiation is very great.

The wind during this period was from the westward, sometimes a light air set in from the south-east towards evening, and fogs occasionally prevailed with a sensation of dampness.

The following is a Table of the range of the Thermometer during five months, commencing with the 1*st of April.*

	April.	May.	June.	July.	August.
Minimum	38	53	63	64	62
Maximum	92	104	107	109	107
Mean of Minima	58	75	82	83	69
Mean of Maxima	76	84	97	103	99

I have had very little opportunity of becoming acquainted with the state of health of natives of this part of the country, but as the circumstances under which they are placed differ so materially from those likely to affect troops, I think it need not be particularly attended to.

I omitted to remark that the thermometer was observed in a rowtie, the description of that in general use for native Troops in Hospital, a kind of covering affording but little shelter from the intense heat of the day or severe cold occasionally at night.

Table of the principal Diseases affecting the men of the 21*st Regiment N. I. from the* 1*st of April, to the end of August,* 1841.

	April.	May.	June.	July.	August.
Mean Temperature of each month .	67	79½	89½	93	84
Strength of 21st Regiment	1024	1059	1061	1061	1060
Bowel Complaints	37	27	26	22	27
Fevers	34	31	45	50	111
Rheumatism	10	10	15	15	15
Other Diseases	64	34	47	47	39
Total	145	102	126	134	192
Number per cent under treatment . .	rather more than. 14 pr. cent.	less than 10 pr. cent.	12 pr. cent	less than 13 pr. cent.	less than 19 pr. cent.
Number of deaths	3	none.	none.	1	none.

From these statements it will appear first with reference to the thermometrical register that the temperature goes on increasing in a somewhat regular manner monthly to July inclusive, but with regard to sudden changes it must be understood that they are of frequent occurrence, and comparatively cold gusts of wind come down from the ranges of mountains around us.

Secondly, That on looking at the table of diseases, there is a great increase in the number of fever cases as the temperature diminishes and this continues to be the case. This brings us to the conclusion that some other cause besides high temperature must be looked to as the main agent in their production, and from all that I can observe I think there is no doubt that fever is endemic at this station. Whether to an equal extent with Guzerat and other similar parts of India, I cannot of course say, as a residence of some years or reference to medical registers, can alone decide the question.

With regard to bowel complaints, the returns of the 21st Regiment do not show that they are of very frequent occurrence or of a serious nature, but although this has been the state of one particular regiment, I am aware that they do prevail very extensively and are exceedingly obstinate in their nature.

Rheumatism, I look upon as another disease which it is of much consequence to notice; if found to prevail at any particular station, that station should be avoided of all others, as it is the disease which causes the filling up of our pension list to a greater extent than any other, and I mention this because I think it likely that the severe cold of winter here may be ex-

tremely productive of it in native Troops. It appears then from the following circumstances, viz. 1st, That bowel complaints are of frequent occurrence and of an obstinate nature. 2nd, That fever is endemic during July, August, and September, and from intense solar radiation and sudden changes of temperature likely to be of a highly congestive nature at all seasons, as far as they have been observed. 3rd, That Rheumatism is to be apprehended from several causes. 4th, There being no apparent immunity from any particular class of diseases and convalescence proceeding slowly in all, that we may conclude that Quetta cannot be considered a healthy place. July and August may certainly be reckoned the most sickly season.

The men during the whole period under consideration, were living in rowties, and their food not particularly good, sufficiently varied, nor had they their usual supply of vegetables as when in India.

The obvious means of meeting and moderating the evils attendant upon a sojourn at this station, will be in the careful adaptation of clothing to the season, most particularly that of warm clothes during the winter and the shelter of houses, due care being had recourse to for their proper ventilation, consistent with the exclusion of violent currents of air; exercise of course will be most indispensably necessary.

The selection of a proper spot for a cantonment is a matter of the utmost importance; I imagine fever prevails in the proportion of five or six to one in the lower camp, (alluded to as the spot occupied by the political residency and projected lines of the 20th N. I.) compared with what may be expected in the Head Quarters camp, situated as described on the slope rising up as before mentioned, and than which I cannot imagine a better place for a cantonment, particularly when it may become sheltered by buildings, &c.

In conclusion I believe it may be considered that the past has been an unusually unhealthy season.

Quetta; *September*, 1841.

3

Medical Report of Moostoong. By A. Wright, Esq., Assistant Surgeon, 25th Regiment, N. I.

Moostoong is situated in 29° 43′ north latitude and 66° 35′ east longitude and is elevated 5300 feet above the level of the sea; the valley of Moostoong is an alluvial plain running from north to south for about eight or ten miles, having high barren hills on each side. The valley is plentifully supplied with good water which is brought from the foot of the

hills, by means of aqueducts; and is scattered over with villages, orchards and corn-fields, the two last particularly about Moostoong.

The troops were encamped at Khoodawut about a mile to the eastward of the town on rising ground of a sandy soil and covered with low camel shrubs; the whole of the ground towards the south-eastern hills is very barren, being chiefly drifted sand towards the west and north, and close to the camp are orchards and cornfields. When the Troops arrived it was in the middle of April; the trees were coming into foliage and the corn was coming into ear, the weather was cold and raw, rain having fallen a few days before and the tops of the high range of hills were covered with snow. From the 20th to 27th of April, the weather continued cold and damp with occasional showers of rain and thunder; on the 28th a thunder storm with heavy rain and hail, the hills were again covered with snow which remained for several days. The thermometer's highest diurnal range 82, lowest at sunrise 52. In May the weather became warmer and towards the end of the month it became oppressive, the wind was generally from the north-west and dust storms. Thermometer's highest diurnal range 94, medium 81, lowest at sunrise 56. In June the heat continued to increase during the day, the nights remained cool and pleasant. Thermometer's highest diurnal range 94, lowest at sunrise 68, medium 81.

The Troops stationed at Moostoong consisted of a Wing of H. M.'s 41st Regiment, 3d Company 1st Battalion of Artillery, and the 25th Regiment N. I., the former occupied houses, the others were in tents.

The following Table will show the average number of Soldiers per cent. under medical treatment during the months of April, May, and June.

		Fevers.	Bowel Complaints.	Other Diseases.	Died.	TotalDeaths
Right Wing H. M'.3 41st Regiment.	May.	7	3	4	"	"
	June.	22	6	4	3	"
	July.	4	5	5	5	8
3d Company 1st Battalion of Artillery.	April.	1	1	"	"	"
	May.	"	"	"	"	"
	June.	1	2	"	"	"
25th Regiment N. I.	April.	10	2	11	"	"
	May.	7	2	7	"	"
	June.	10	2	5	1	

The most prevalent diseases have been fevers and bowel complaints. It would not be fair to ascribe the cause of these diseases altogether to

the climate of Moostoong, as a great number of the cases were contracted either in Cutchee or in the Bolan Pass, and chiefly caused by the sudden change of temperature. Before the troops left Cutchee, the weather was very hot; in the Pass, it got suddenly cold, accompanied with rain, and these were rendered more efficient by such causes as diminish the constitutional powers of resistance, viz. fatigue from loss of sleep and continual long marches, and night duties. The heat of the day keeping up a very free exhalation from the skin, I shall call the predisposing, and associate with it loss of sleep, and fatigue. The exciting, the cold chill of the night, checking this exhalation, and with it associate night duties. The cause will therefore resolve itself, simply to checked perspiration, acting upon bodies with a peculiar predisposition; this predisposition the effect of climate.

Having been only stationed at Moostoong for about two months, I cannot speak as to the different seasons, but from all I could learn from the natives of the country, the months of July and August are considered by them, to be the most unhealthy; they seem to think that the climate is good and do not suffer much from sickness. It is reckoned by them far superior to Quetta. The diseases to which they are liable, are fevers and bowel complaints during the hot season; in the winter they suffer from pulmonary affections. From all I can learn, it bears a considerable resemblance to Kelat as to the nature and physical effects of the climate upon the troops and the people themselves.

In the table it will be observed that the Wing of H. M.'s 41st had the greatest proportion of sick in June, greatest number of deaths in July. This is owing to the detachment that was at Nowsky, and I understand that all the deaths that occurred were men who had been with that detachment.

How far sickness has been caused from the men having been exposed in tents I am not prepared to say; the soldiers of H. M.'s 41st were in houses or rather huts; they suffered more from fever after they removed into them, and the Medical Officer thought proper to remove them again into tents, when they gradually got better; the men of the Artillery again were in tents during the whole season, and they remained, comparatively speaking, healthy. During the short time they were under my charge, I frequently had not a patient in hospital, but still I am of opinion that if they had had good substantial barracks, they would in all probability have suffered less in a country where great and sudden changes of temperature take place; good houses and suitable clothing are absolutely necessary for the preservation of health and a great preventive of disease.

I understand that Moostoong, like all other places in the country, has

been more than usually unhealthy this season on account of the heat being greater than it is in general years.

Camp, Dadur, 26th November, 1841.

4.

Medical Report of the Fortress of Kelat. By A. Wright, Esq., Assistant Surgeon, 25th Regiment, N. I.

The fortress of Kelat is situated between 29° North latitude and 65° to 67° East longitude, and is elevated 6000 feet above the level of the sea. The town and citadel are built upon the extremity of a high broken ridge of hills sloping down from the south-westward; the citadel is built upon its north-western extremity, where it falls abruptly into a narrow alluvial valley below; the citadel rises two hundred and twenty feet above the valley, and a village encircling its north eastern base stretches outside the walls to the southward. In front and to the left from the northern angle of the fortress, arises rather abruptly a low irregular broken hilly ridge, which gradually ascends to the westward. Immediately to the east of this from north to south skirting the ridge and south-eastern face of the fortress, stretches an alluvial plain from two to three miles in breadth. This plain is quite level, and is thickly strewed with walled orchards and villages as far as the high south eastern hills.

The town is surrounded with a high mud wall with circular bastions at intermediate distances; the houses are all built of mud, and the streets are narrow and confined and in a filthy state; good water is abundant; the stream that supplies the town and valley rises out of the foot of the south eastern hills.

The surrounding country is irregularly mountainous, interspersed with gravelly ridges, alluvial valleys, and plains, and, where uncultivated, is covered with low dry looking camel shrubs. The hills are formed chiefly of limestone rocks, and are plentifully interspersed with irregular pieces of flint.

The grains that are chiefly grown are wheat and barley, both very good of their kind. The gardens produce melons of excellent quality, apples, apricots, pears, mulberries, plums, and grapes. The country is miserably deficient in esculent vegetables, the whole catalogue consisting of cucumbers in season, turnips and carrots of a very inferior tasteless kind, onions, brinjals, and one or two bad kinds of badgi.

In regard to the climate, I can only speak for the three months I have been here. In July the heat during the day was very oppressive, mornings

and evenings pleasantly cool; from the 25th to the 31st, cloudy, with thunder towards evening, and on two occasions rain fell; the inhabitants generally expect rain at this season, but they say that very little has fallen for the last three years, and on this account the heat this season has been much greater. Wind during the month, generally from the south-west. Thermometer's highest diurnal range 89 to 91½; lowest at sunrise 73. August, the heat this month was not so oppressive; on the 14th, 15th, 16th and 17th, there was thunder with light rains, mornings and evenings cloudy and hazy, wind during the month generally from the west. Thermometers highest diurnal range 79 to 88; lowest at sunrise 72 to 80½. September, the heat began rapidly to decrease, and the mornings and nights were very cold, the atmosphere during the month being clear and dry, winds blowing steadily from the north-west, thermometer's highest diurnal range 72 to 76; lowest at sunrise 35½ to 68. I may observe that the range of the thermometer was taken in a good substantial building occupied as a temporary hospital.

The troops stationed at Kelat, consisted of a detachment of the 3rd company, 1st Battalion of Artillery, and the 25th Regiment; the men occupied good houses in different parts of the town, and were well protected from the excessive heat.

The following table will show the average number of soldiers per cent, under medical treatment during the last three months.

		Fever.	Bowel Complaint.	Other Diseases.	Died.	Total of Deaths.
Detachment of Artillery.	July.	1	"	"	"	"
	August.	1	"	"	"	"
	September.	"	"	"	"	"
25th Regiment, N. I.	July.	32.1	1.5	5.4	3	"
	August.	32.2	1.3	3	6	"
	September.	22.2	1.1	2.2	1	10

The most prevalent diseases have been fevers and bowel complaints, and the greatest number of sick were in the month of July and August. Since my arrival here I have instituted many inquiries with the view to obtain some information as to the nature and physical effects of the climate upon the people themselves, and the diseases to which they are liable, &c. From all I could learn, this place is esteemed by them the healthiest spot in this part of the country; and from what I have seen, their diseases are few and simple, chiefly intermittent fever and bowel complaints. The seasons that these diseases prevail, are during the months of July and August;

the rest of the year is considered by the natives to be very healthy. This season is considered by them to have been a peculiar one, much more sickly than usual, and they attribute the cause to the excessive heat.

The fever has all along been of the intermittent form, and, generally speaking, mild; several cases were complicated with bowel complaints. In estimating the number of sick, it must be recollected that the 25th Regiment had suffered severely from fever and ulcers whilst stationed at Kotra in Cutchee, and also during the march up the Bolan Pass. In the month of May, whilst stationed at Moostoong, the men suffered considerably from bowel complaints. With regard to the causes of the bowel complaints, I consider the most essential were, the great diurnal variations of temperature with a high range of the thermometer acting upon bodies possessing a peculiar predisposition.

The causes of the fever were, no doubt, malaria, combined with the great solar heat, acting on bodies previously predisposed; a great many deductions must be made for ephemeral attacks from exposure to the sun, and a number from relapsed intermittents.

In the cold season I have no doubt that pulmonary complaints will be of frequent occurrence. The localities in the vicinity of this station cannot be greatly instrumental in the production of disease. The cultivated lands north and east, are not sufficiently irrigated, and the absence of jungle in the principal valleys, so insures us against the decomposition of animal and vegetable materials, that there is exemption from all noxious exhalations; with these advantages, we might look to the climate as likely to be more than usually healthy. To Europeans of temperate habits, the climate is eminently favourable, in proof of which, I may mention that out of 25 European Soldiers and 10 Officers only two of the former had slight attacks of fever, from which they rapidly recovered. Individuals who were unhealthy in India, have enjoyed good health here; that the climate does not tend to weaken or subdue the constitution, is, I think, evinced by the fact of the Europeans all looking healthy and robust. Again with regard to native troops, we may reasonably conclude, and our experience goes to confirm the inference, that Kelat is never likely to be a healthy station for the natives of India, the variation of temperature being too great, and the extreme cold in the winter season must necessarily prove most injurious to the health of the inhabitants of a hot climate, although the prophylactic means of good housing and plenty of warm clothing, might do much in warding off its effects.

Camp, near Moostoong, 12th October, 1841.

5.

Medical Report on Kotra. By W. S. Babington, Esq., Assistant Surgeon, Left Wing 1st Regiment, Light Cavalry, Lancers.

The climate of Kotra generally, as regards the troops, is as far as my experience for eight months will allow me to judge, exceedingly bad.

The average number of soldiers per cent under medical treatment from the 1st of February 1841 to the 31st August 1841, was, during the best months, 27 per cent, and during the worst, 112.

The earliest part of the year, or the cold weather, was, by far, the most healthy, and the months from June to the end of August, the most fatal. From inquiries amongst the natives of Kotra, I could not ascertain that the past season has differed from former ones.

The mortality during the last four months out of 175 men has been 13.

The accommodation afforded to the men was most excellent, all the guard rooms being good, and the men's huts roomy, and well defended from the sun by thick mud roofs, and from the hot winds by mud walls before their doors; and, had they not had such protection, the fatality must have been very much greater.

The months of May, June, July, August, proved the most unhealthy, but at the same time, I think it right to say that I have heard that October and December were also equally so; the cause for the sickness during the period I have first mentioned is, I believe, to be from the intense heat, not only of the sun but also of the wind.

Kotra is in my estimation, a most unwholesome station for troops, not only on account of the climate, but from the fact of the camp being situated in one of the lowest spots around, and surrounded by jungle.

In answer to the last clause, I have only to say that every precaution as regards clothing and protection from the weather was taken, nor was any thing left undone that could in any way add to the comfort of the men, nor is it in my power to suggest any method by which sickness at Kotra could be avoided.

6.

Report on Bhag. By Captain G. Boyd, 2d Grenadiers.

I arrived at Bhag in command of a detachment of 270 Infantry and 100 Scinde horse, on the 23d April, the weather then delightfully cool in the morning and evening; maximum of thermometer 90 in tents. The weather became close about the 10th of May during the day and night, but the mornings still cool; wind blowing from the north-west; thermome-

ter in a house 87. The climate generally good, from what I could learn from the natives, and I believe the different detachments stationed have found it so, with the exception of being attacked by small sores in July, from eating an excessive quantity of musk-melons, to which the natives attributed it.

Not the means of answering this question. (2)

The best season in my opinion for troops, is from October until the beginning of April, when it becomes warm shortly after sunrise, but to the end of that month troops might without inconvenience from the heat, remain in tents; the last season was a favourable one, from rain having fallen on the 27th April, thus delaying the approach of the hot winds.

The number of deaths out of 270 of the 2d Grenadiers were 5, four from coup de soleil and one from fever. Two sowars of the Scinde Irregular Horse died, one from fever and one from coup de soleil.

During the whole period of my stay at Bhag, the detachments were in routies, but in the day they sheltered themselves in temples and sheds thrown up for the purpose, but of very slight construction. Had good substantial barracks been built, I should think there would be but little sickness, except from the danger of being struck down by the powerful effects of the sun, which in all cases caused almost sudden death. Fever was not prevalent in the town of Bhag, and I had but little of it in the hospital.

I cannot state as to this question. (6)

Ditto Ditto (7)

In the middle of the month of May, the weather increased continually in closeness; thermometer rising to 94 in the house with closed doors and watered tatties; in tents it became 120 and the wind changed to south-west, still blowing fiercely hot, but with a moisture which prevented water cooling as with northerly winds. This wind is considered by the natives most pestilential in its effects, and causing as many deaths as the sun during the day; it prevails all over Cutchee, men suddenly becoming sick and dying in a few hours. The heat and closeness continued to increase, particularly at night, so much so, that our feelings became scarcely bearable, but still for a short time in the early morning there was a coolness, sufficiently so to enable one to have the men at drill in white jackets for half an hour. This fearful heat continued until the end of July, when a heavy fall of rain for three hours took place at night, after which our miseries ceased, for the place became bearable and pleasant in the morning until my departure on the 25th September. During the whole of this period I received fearful accounts of the effects of the heat from

the head Quarters of the regiment at Kotra, whilst I only lost five men from the effects of the sun, and two from fever, out of the whole detachment. The men were encamped on an open place in tents, but during the day took shelter in temples and sheds; the sick which amounted to an average of from 12 to 18, were under cover in a musjid. Thermometer in shade during May, June, and July, 120. A number of sick men who came in from Kotra in August, described the change as most pleasant, and said it was better to reside at Bhag and bear the heat of tents, than die from fever in huts at Kotra. The greatest heat I experienced was on the 18th June, when it rose to 102, and at night on opening the doors and admitting the hot air, it rose to 107.

The inhabitants of Bhag report that it is considered the most healthy place in Cutchee and much cooler than either Dadur or Kotra, which is ascribable to its distance from the hills; it is also less subject to ulcers than these places. As far as regards health it is decidedly the best spot for a military post, and the only objection which exists (a scarcity of water) s now, I understand, done away with by the river being allowed to run free. *Camp, Dadur, 12th November.* 1841.

7

A reply to Queries concerning the Statistics of Shikarpore. By Assistant Surgeon G. F. Forbes, Left Wing, 8th Regiment N. I.

No. 1. The climate of this station in so far as I may judge from the limited period to which my experience of it extends, is not unfavourable to troops.

At the present season there is a very material difference in the temperature of the days and nights (the latter being very cold); and it is chiefly in this particular that the climate seems to influence the health of the sepoys, giving rise to the prevailing diseases, viz. intermittent fevers rheumatism and affections of the chest.

No. 2. During the best months of this year, viz. from March to September, the average number of sepoys under medical treatment amounted to 21 per cent. per mensem.

The worst months extend from October to March. From the 1st of October up to this date, the average number of sepoys under medical treatment is 36 per cent. per mensem.

No. 3. There are but two seasons, the hot and cold, the former commencing in April, and lasting till about the end of September; the latter from the end of September, until April.

From the hospital returns and from inquiries made by me of Captain W. J. Browne, commanding left wing, 1st Regiment, Native Infantry, who has been here since the 13th of March 1841, the hot season would seem most favourable to the health of the native soldiers.

No, 4. No deaths have occurred for the last four months.

No. 5. The accommodation for the troops at this station is decidedly bad. The lines consist of long, low, mud huts, indifferently built and quite inadequate to protect the soldier either from the heat of the warm season, or the inclemency of the cold one, and I feel convinced that a great deal of the sickness, that has hitherto prevailed, would be prevented by substituting in their stead barracks built with brick, and of a proper height and construction,

No. 6. This station is most unhealthy from the end of September to the end of November. The reasons, I attribute, are, first, the malaria arising from the decomposition of the sediment left after the inundation of the river Indus. Secondly, the rapid change from extreme heat to extreme cold; particularly at night. Thirdly, the want of proper houses for the sepoys.

8

Statistical Report of Sukkur. By J. Jephson, Esq. Assistant Surgeon.

1. Climate — The climate of Sukkur, is very oppressive; the atmosphere is hot, dry, and loaded with electricity, particularly in the months of July, August, and September. It would seem, as if the solar beams were decomposed by the rock and soil, and thereby producing the electrical state of the atmosphere. The quantity of rain which has fallen this season is very small, only two slight showers in July.

From what I have observed during the past hot season, I should say, it is a healthy climate for natives, but a very trying one to Europeans, and always, an oppressive one in the hot season, arising, I doubt not, from the highly electrical state of the atmosphere. The unhealthy season appears to commence in October, and continues till the end of November, at which time, the river is falling, after the annual inundation; when from the powerful rays of the sun, acting on the decayed vegetable matter, and the clayey absorbent detritus brought down by the river, malaria is rapidly generated, and hence the cause of the prevalence of fever during the months of October, and November. This fever is variable in its character, at one time intermittent at another remittent; the latter often assuming a typhoid character. These months then may be considered, as the unhealthy ones; but for these, I should say this is a healthy climate.

2. For the period of six months, that I have had charge of the 1st Grenadier Regiment N. I. the average portion of those, who have been under medical treatment, in the first four months, June, July, August, and September, is about 6 per cent per month, and the average for the month of October and November, will not be more than 14 per cent. per mensem.

3. If the troops can be protected during the months of June, July, August and September, and not marched from station to station, nor exposed to the great heat of the sun, the period embraced in these months may be considered healthy for native troops; the most frequent disease during these months is coup de soleil. In the past season I had several cases, but only one died, and this was more from old age and debility. The cases of fever during this hot season were generally of a very slight character, arising principally from debility, by exhaustion.

4. Since I have had charge of the Regiment only three deaths have occurred, and one of these, a case of small pox, brought in from Khyapoor while the detachment was stationed there.

5. The lines occupied by the sepoys at the present time are not at all adapted to such a climate as that of Sukkur. They are merely built of reeds, and plastered over with mud, and the roofs are formed of the same material, and the houses are much too low. The heat was so great during the past hot season, that the sepoys preferred going into the date grove, on the bank of the river, during the heat of the day when not on duty.

6. The periods when Sukkur is the most unhealthy are the months of October and November; I am unable to speak of the cold season.

7. The selection of the present encampment by Dr. Don, is a very judicious one, as experience has proved; it is situated on a limestone formation, 50 feet above the level of the bed of the river, and at some distance from its bank, which in a great measure places it out of the reach of malaria to any extent, and thereby much sickness is avoided. No situation in the vicinity of Sukkur could have been better chosen than the one selected by Dr. Don. The distance for the sepoy to fetch water is trifling, and an excellent bazar has been formed between the encampment and the river, which is well supplied with vegetables, — so necessary and so conducive to the health and well being of native troops, and contributes much to the healthiness of Sukkur for sepoys.

I have observed during this hot season that in the cases of fever and

also in other diseases, the human body is affected in a remarkable degree, during the different phases of the moon: the atmosphere about this time becomes most oppressive and depressing to the human constitution,—particularly near the full moon. But my observations have not been sufficiently minute to enable me to enter more fully upon this fact; I can, however, venture to say, that, so often as I have taken notice, I have found that the paroxysms of the fever during the springs were generally more violent about mid-day, than at any other time.

Camp Sukkur, November 11, 1841.

9

Statistical report of Sukkur. By. E W. Edwards Esq. Surgeon 23rd Regiment N: I. I.

1. Climate. The climate of Sukkur is very dry, and for six months in the year very hot. From the time the sun reaches the equator in the vernal, till his return in the autumnal equinox, the heated state of the atmosphere is continuous, and excepting perhaps a thunder shower in July, no rain falls during this period. From the 21st September the heat gradually becomes less and less, till in the month of January the cold is considerable. Whatever rain may fall during the year, which is always very scanty, generally falls between December and March.

The climate is decidedly healthy, excepting for about two months of the year, namely October and November, when from the drying up of the country after the annual inundations and the very great falling of the river, a large surface of mud becomes exposed to the action of a powerful sun. Malaria is thus generated, which affecting a large portion of the community, intermittent fevers become very prevalent: — excepting these two months, the climate is dry, and healthy.

2nd. The average portion of the 23rd Regiment N. I. under medical treatment during the best months, has been a little more than 6 per-cent per mensem; while the average number of the worst months, has been upwards of 12 per-cent.

3. If during the hot months of May, June, July, August, and September, the troops can be kept under good shelter, and not marched about the country, nor exposed to the intense heat of the climate while the sun is above the horizon, the period embraced by those months, may be considered the most healthy for the natives. Coup de soleil is the most frequent disease at this period, and many sepoys die when exposed to the direct influence of the solar rays.

The last season has been in all respects like the preceding one.

4th. Out of the whole regiment consisting of 800 men, there has not been a single death since February last.

5th. The lines formed for the sepoys are very flimsy, and not at all adapted for such a climate. They are made of reeds thinly plastered over with mud, while the roofs composed of the same slender materials scarcely exceed a couple of inches in thickness. The thermometer in them in the hot weather averages 110° throughout the day, and sometimes is as high as 118° and 120°.

6th. The months during which Sukkur is most unhealthy, are, as I before stated, October and November, but the extreme cold of December and January causes frequent cases of congestive fevers, especially with determination to the lungs.

7th.. The camp has been most judiciously selected, and is pitched on a ridge of limestone hills, 50 to 70 feet above the level of the river. It is thus raised in some degree above the malaria, damp and fog of the drying up bed of the river; and much rheumatism, fever &c. are thereby escaped and much unwholesomeness avoided. After three years experience Sukkur has been found the most healthy spot in the whole of Upper Scinde.

The absence of periodical rain, the very small quantity which falls throughout the year, the very dry state of the atmosphere, the elevated site on which the camp is situated together with an inexhaustible supply of good water, and an abundant supply of excellent food, especially fresh vegetables, which to a sepoy is a matter of the first importance to his general health, all combine to render it healthy. I may remark here, the lunar influences at the phases of the moon are very powerful, producing atmospheric changes most oppressive and depressing to the human constitution, and I have generally observed that to whatever ailments the sufferer may be subject, they are brought prominently out on these occasions. The climate is too hot for European soldiers during six months in the year. It is as much as an officer can exist under with every comfort and convenience which his situation enables him to collect around him.

Camp, Sukkur, 10 *November,* 1841.

Article VI.

History of the Epidemic Fever which prevailed among the men of Her Majesty's 17th Regiment during the monsoon of 1841, *when quartered in the Colabah barracks, Bombay.* By Arthur S. Thomson M. D. Assistant Surgeon, 14th Light Dragoons, lately 17th Foot.

Presented August, 1842.

Preliminary Remarks. — The 17th Regiment landed at Bombay from the Affghan campaign in March 1840. The Regiment was then divided; one wing was left at Bombay, the other sent to Poona.—In June 1841, the wings which had previously changed stations were united in the barracks at Colabah, until September 1841, when the Head Quarters embarked for Aden. Disease and death became prevalent among the men in June, and on the departure of the Head Quarters for Aden, nearly two hundred men were left sick. The detachment left at Bombay were shortly after, in consequence of the sickness, moved into the Town barracks, and from that, into tents on the esplanade. On the 27th October, 196 sick were embarked for a month's cruise. The detachment remained in tents on the esplanade at Bombay until the end of February, when they marched to Poona. The Head Quarters during their trip to Aden lost several men, and landed there with nearly 50 sick, having embarked without one man in hospital.

Nature of the monsoon.—The monsoon of 1841, proved extremely unhealthy at Bombay and over all India. * The following table will show the temperature and quantity of rain which fell during the different months in Bombay.

Months.	Quantities of Rain in Inches	Average temperature.		
		Maximum.	Minimum.	Mean.
	In. cents.			
June	22 62	85	82	83½
July	19 23	83	78	80
August	19 81	80	78	79
September	1 43	83	78	80
October	,, ,,	86	81	83½
November	2 45	84	76	80

* *Note by the Secretary.* — This table has been filled in from the records of the European General Hospital. As the sources of radiated and reflected heat

On the prevalence of fever and other diseases among the men.

			Total admissions.
In June	55 fevers were admitted	and 68 other diseases	123
" July	136	136	272
" August	165	80	245
" September	187	78	268
" October	375	79	454
" November	180	112	292
" December	180	117	297
" January	50	85	135
" February	38	53	91

It will be observed that the number of admissions from fever increased until October, when the large number of 375 cases was admitted. The number of other diseases admitted was comparatively small until the months of November and December, when the effects of the fever caused dysentery, &c.

The intensity of the fever. — From June until February both at Aden and Bombay, 1366 cases of fever were admitted of which 58 died, which is about one death for every 23 cases of fever treated. This proportion of deaths among fever cases is very large, 1 death out of every 50, 60, or even 100 admissions of the slight fever which drives soldiers into hospital, is about the average.

On the influence of the different months on the intensity of fever.

In June	1	case of fever died out of every	8	admitted.
July	1	Do.	27	"
August	1	Do.	12	"
September	1	Do.	17	"
October	1	Do.	20	"
November	1	Do.	90	"
December	1	Do.	180	"

The fever was most intense in June, August and September. The extreme intensity of the cases in June, illustrates what is often observed in epidemics, that the cases which occur at first are often the most severe.

On the duration of the recoveries from fever. — About 13 and in some stations 8 and 10 days, is about the average length of time soldiers

abound more in the locality of that hospital than in Colabah, the results are probably higher than they would have been, had the observations been made in the hospital at Colabah.

admitted with fever are detained in hospital; but in the present fever the average residence in hospital was different in different months, but every instance exceeding the above average, thus: —

In June the recoveries were on an average 20 days in hospital.
" July .... Do. ..... 16 ..... Do.
" August ..... Do. ..... 20 ..... Do.
" September ..... Do. ..... 27 ..... Do.

and in October so completely deteriorated were the constitutions of the men, that they were unfit for duty for many months, and even the duration of the cases given in June, July, August and September, is only an approximation to the true duration, as some men, although discharged from hospital, were convalescent in barracks in consequence of the crowded state of the hospital.

The duration of the fatal cases. — The following table will show the average age of 58 fatal cases of fever, and their duration during the different months.

Months.	No. of deaths.	Average age.	Average duration of Sickness.
June	7	28 years	8 days
July	5	23	12
August	13	25	7
September	11	24	13
October	18	24	7
Nov. Dec. and Feb.	4	30	16
Total Average	58	25½ years	10 days

From the above it will be observed, that 7 days was the shortest average duration of the fatal cases, and these cases occurred in August and October. 10 days was the average period in hospital of all the fatal cases; this is scarcely one-half the duration of a register of some fatal fever cases I have got, but which cases were in several instances complicated with organic disease.

Of the 58 fatal cases.

2 Died on the 1st day they were in hospital.
3 ..... do. ... 2d day..... ..... do.
1 ..... do. ... 3d ..... do.
5 ..... do. ... 4th ..... do.
3 ..... do. ... 5th ..... do.
9 ..... do. ... 6th ..... do.

5 died on the 7th day they were in hospital.
8 ..... do.... 8th ..... do.
4 ..... do.... 9th ..... do.

40 deaths out of 58 occurred therefore before the tenth day the men were in hospital.

It will be seen in the above table that the average age of the fatal cases was $25\frac{1}{2}$ years; this shows that all were not young men, and that on an average most of them had been about $3\frac{1}{2}$ years in India. But the number of young men who died was as great in proportion to the strength as the older soldiers, for out of the 58 deaths, 16 were soldiers under 20 years of age, and therefore just arrived in the country. The fatal cases in June were old men compared to the other months; if the doctrine of seasoning held good, these men ought to have resisted the climate longer than the young men.

Abstract of two fatal cases of fever.

Having briefly stated the chief characters of the fever, I shall now insert an abstract of two fatal cases.

Case 1st. — Private T. O'Keef, aged 20 years; in India 6 months; admitted 7th October 1841, died 14th October; duration of disease 7 *days*. On admission at Colabah, pulse 118, scarcely perceptible; drowsy, and sinking down in the bed; skin cold and features sunk; tongue moist and furred. Next morning the report was, pulse 126, scarcely perceptible; bowels open with castor oil; skin cool, no pain; great prostration of strength. During the day yesterday indistinct remission of fever, when he had a large dose of quinine *9th October*. Pulse 120, small and feeble; all the characters of sinking of the powers of life. *10th October*. Pulse 110, small and feeble; appears better; took some nourishing soup with difficulty; skin cool. *11th October*. At noon yesterday severe increase of fever; this morning pulse scarcely to be felt or reckoned. 13th no change; is sinking. 14th Expired at 10 A. M.

The treatment consisted on admission of the application of a large blister to the head and neck, hot water to the feet, frictions to the surface and the exhibition of the carbonate of ammonia and other stimulants; whenever the least remission of the fever occurred as on the 8th and 10th, large doses of quinine were given with nourishing soup. Bowels kept open with gentle laxatives.

On examination of the body, serous effusion was found in the ventricles at the base of the brain and along the spinal cord; congestion of blood in the internal organs of the body.

Case 2d. Private William Cope, aged 21 years; in India 2 years; duration of disease 4 days; admitted on the 9th October in a state of great prostration of the powers of life, and on being questioned said he had slight headache, but no other complaint; pulse 116. 10th, *October*, slight remission of fever yesterday, when he had a large dose of quinine; it lasted only two hours. Pulse now 126,

very weak : no headache ; bowels freely open ; severe pain complained of in the abdomen. 12th. Extreme collapse followed the application of 60 leeches to the abdomen, that he almost sunk : pulse this morning 120 and very small ; tongue furred and dry ; skin covered with a cold perspiration. 13th. Pulse intermitting ; occasional delirium; no pain ; skin cold ; as the day advanced he was worse, and expired during the night.

On examination of the body, congestion of blood was found in most of the internal organs, and a large effusion of serum on the base of the brain and along the spinal cord.

The treatment consisted in the application of 120 leeches to the head and abdomen, the continued exhibition of stimulants, quinine, laxatives, calomel and hyoscyamus.

Remarks on the cases. — These two cases will give an idea of the nature of the disease : the absence of any thing like a distinct intermission and the great prostration of the vital powers characterized all the fatal cases. If a distinct intermission was observed, large doses of quinine were immediately given, and these cases almost always did well. It will be observed that in both the cases given, congestion of blood was found in the internal organs ; this effect so characteristic of cholera, yellow fever, and almost all diseases which prove rapidly fatal, would lead us to infer, that general bloodletting might have proved beneficial. Depletion tried in some cases, did not succeed, in some cases blood could not be got to flow, and the injurious effect of local depletion was often very obvious. Among the men of the 94th Regiment, who were quartered in the barracks on Butcher's Island, and among whom a fever similar to that in the 17th Regiment occurred, general bleeding was freely tried, and many of the cases proved rapidly fatal. During the months of November and December, the type of fever was so changed, that a small bleeding was very beneficial. In the fever which occurred among the marines of the Endymion, bleeding was highly injurious, and stimulants constantly required. These circumstances are stated, because it is a common opinion, that internal congestion invariably indicates depletion ; this is in a great measure correct, but it is stated by Armstrong that depletion must not be made until a re-action appears, and even then it is dangerous if the vital powers are much depressed. In the present fever, the greater part of the blood in the body was congested in the internal organs ; a very small portion of it kept up the powers of life by circulating, and if this was withdrawn by bleeding the patient would sink :— to show the correctness of these remarks I insert another case.

Fever case No 3. *to illustrate the injurious effect of depletion :—duration of sickness* 30 *hours.*

Private Thomas Footed, aged 25 years ; in India 2½ years ; of a muscular frame : admitted on the 18th June 1840, with fever of a low type, and with

symptoms of congestion of all the organs, was bled to 16 ounces, and had sixty leeches applied to the head and a blister to the neck; a dose of calomel and antimonial powder and an ounce of wine to be given every second hour.

On the 29th the report is, pulse 125, weak; no remission of fever; no sleep; bowels open; respirations frequent and labouring; no irregular sound from lungs; great prostration of strength. A blister was applied to the chest, five grains of calomel and two of opium given, and wine continued every second hour.

4. P. M. 29th. Blister risen well; heart's action and that of lungs increased; pulse 128, small; skin hot and moist; no clammy perspiration.

9. P. M. 29th. Is much worse; pulse scarcely perceptible; had slight delirium; skin covered with cold perspiration. Expired at 10 P. M. on the 29th June.

Sectio Cadaveris. Body in good condition and muscular; slight congestion of the lungs and liver; considerable effusion of water on the base of the brain and along the spinal canal.

Remarks.—The increased action of the chest and lungs was probably produced by the effusion of water along the spine, preventing some of the nerves of respiration from performing their functions.

In the treatment of all the cases, the object was to excite the powers of life, and when the blood began to circulate, if necessary, to deplete. Many men died from the extreme sinking which followed a paroxysm of fever, and many men recovered from the verge of the grave by wine, soup, &c. I will conclude this section by inserting a recovery from fever.

Case No 4. Recovery from fever. Severe case.

Private W. S. aged 22 years; in India 3 years; sanguine habit. Admitted on the 1st July 1840, complaining of general debility, &c. A vein was opened but he fainted before many ounces slowly came, and no more could be got; had an emetic and purgative; he afterwards complained of headache and had 60 leeches applied to the head, and a diaphoretic mixture constantly given. *2d July*, Pulse 84; skin hot and moist; no pain. Continued the diaphoretic mixture. At night occasional delirium; skin moist and hot; bowels open; eyes wild; pulse 124 soft; complains of abdominal pain. A blister was applied to the neck and head, and a draught composed of wine, Tinct Morph. Muriat. and Tartar Emetic given; the head to be rubbed over with strong Tartar Emetic ointment.

3d. Slept a little after draught; pulse 120; skin moist; bowels open; much irregularity in his manner. Diaphoretic mixture and wine every second hour with 40 drops of Tinct. Muriate of Morphia at night.

4th. Pulse 79: skin moist; eruption on head from the antimony; slept none; bowels open; occasional delirium. The wine and diaphoretic mixture continued; at night, 5 grains of Calomel and 5 of Hyoscyamus.

5th. Slept well last night, no fever; pulse 76. 6 grains of Quinine every third hour. *Vespere.* Calomel, Antimony and Hyoscyamus.

6th. Fever with delirium came on yesterday at noon, and has continued since, had 60 leeches to the head, and this morning pulse 109; skin hot and dry; head warm and temples throbbing; 30 leeches applied to the head and diaphoretic mixture given

7th. The most fearful collapse followed the application of the leeches and the fever; skin covered with cold perspiration and pulse scarcely felt. Brandy and carbonate of Ammonia given every 10 minutes. Had 40 drops of Tincture of Morphia last night and slept well. Pulse 106, this morning; skin cold and clammy; no pain; the brandy and carbonate of Ammonia to be continued.

8th. Strength impaired; Pulse 120: skin hot. Diaphoretic mixture to be given with wine; bowels open.

9th. Pulse 96; skin hot and moist; no pain; occasional delirium.

It is useless to detail this case further, no violent paroxysm of fever occurred again, although there was occasional slight increase of fever. He was convalescent on the 31st July, but was not fit for duty until the 11th September 1840.

Remarks. — It was fortunate for this patient that nature resisted further depletion, on admission. During the hot stage of fever, depletion was indicated, but the injurious effect of the leeches was great, and in this case nearly fatal. As the months advanced, leeches could not be used with the freedom done in this case. The anodyne was a doubtful remedy, but the total want of sleep, he stated he had, appeared to indicate it.

On the causes of the fever, I am inclined to think, that the cause of the fever assuming the fatal type and extreme prevalence, was in a great measure caused by the barracks at Colabah being totally unfit for European troops during the rainy season, aggravated also by the monsoon of 1841, proving extremely unhealthy; but as no science adopts opinions unsupported by facts so easily as medicine, and as this observation is more peculiarly applicable to the exciting causes of disease, I shall therefore here briefly state the grounds on which this opinion is found.

1st. The barracks at Colabah are built almost on a level with the sea. 2nd. The floor is formed of a deliquescent stone, which in damp weather, is always wet, so that it is impossible for the men to keep their feet dry. 3rd. During the rains the water stagnates round the barracks, there being no proper facility for running it away, so that the ground becomes a perfect marsh. 4th. The sea recedes so far as to expose to the sun half a mile of shore covered with slime and marine vegetation; and as the privies are situated here, the smell is often disagreeable.

In proof of the opinion that the barracks were the chief cause of the fever, the following facts may be brought forward.

1st. I had medical charge of the depot of H. M.'s troops, which men occupy barracks not three hundred yards from the barracks occupied by the 17th Regiment, and only two or three fatal cases of fever occurred out of near 200 men, during the monsoon.

2nd. 20 cases of fever occurred among the Officers of the 17th Re-

giment, the disease had a distinct remission, and was easily checked; no case proved fatal.

3rd. On the removal of the 17th Regiment to the Town barracks, the disease assumed a distinct intermittent type. 4th. A detachment of recruits of the 94th Regiment which were quartered on Butcher's Island, where I am informed the barracks are in some respects similar to those at Colabah, were attacked with an extremely fatal fever, which was checked by their removal into the Town barracks. 5th. The 6th Regiment during the commencement of the monsoon were stationed in the Town barracks, and they lost few men with fever in comparison to what the 17th lost.

Setting aside all these facts: is it to be expected, that men occupying barracks where they cannot walk about without rendering their feet damp could be healthy?

Some may think that intemperance, which is often such a fertile cause of disease in India, may have assisted in producing the severity of the fever; but I am sure that I am right in stating, that in the present case intemperance had little or nothing to do with it, for young men just arrived from England without the means of procuring spirits, were apparently as liable to the disease as the old soldiers: and of men under 20 years of age it is stated that sixteen died.

On the benefit which resulted from sending the sick to sea. One hundred and sixty six sick, all of them having suffered under fever, and 12 of them labouring under chronic dysentery, the result of the fever, were embarked on the 27th October, and cruised northward to the Persian Gulf, and arrived at Bombay on the 24th November. During the cruise the weather was pleasant, the lowest temperature was 74 and the highest 86 Fahr.

On the benefit which resulted to the fever cases.—The sick embarked emaciated and without appetite, soon began to eat and get strong; almost every man had a paroxysm or two of fever during the cruise, but mild in its nature compared to what they had at Colabah. Thus of the small detachment of healthy men left at Bombay, one man died of fever out of about 100 cases, during the time the sick were at sea. While at sea out of above 200, no case proved fatal, and few cases were severe. On the arrival of the sick at Bombay, 50 men who had been without fever for three weeks during the cruise were discharged, and before a week had elapsed more than two thirds of them returned into hospital with fever.

The embarkation of the Head Quarters for Aden in September and the short sea cruise, had a beneficial influence by changing the type of the fever.

On the benefit of the sea cruise as a prevention of dysentery following fever. During the cruise about 20 cases of dysentery occurred among the men; at first I was inclined to think that in this respect the sea cruise had been injurious, but on arrival at Bombay I found that about 21 cases of dysentery had occurred out of the small detachment of comparatively healthy men left there; out of the 50 men discharged on their arrival at Bombay who had scarcely been sick during the whole cruise, many of them were admitted with fever complicated with dysentery. I am therefore inclined to think even with these limited facts, that as a prevention of dysentery, the cruise was beneficial.

Out of the 12 cases of chronic dysentery embarked, three died; none of them received any very obvious benefit from the cruise.

On the injurious effects of the fever. 1*st In producing dysentery.* It will be observed on referring to the statement detailing the prevalence of fever and other diseases during the different months, that in November and December the number of other diseases admitted, increased in a very large proportion compared with the previous months. In October a few cases of dysentery occurred, but when the cold nights of November and December came, dysentery became more prevalent, and 130 cases were admitted during these two months, and 23 died. This large mortality out of 130 cases of dysentery was in some degree produced by the exhausted constitutions of the men not allowing free blood letting, and many of the cases were chronic, in every respect, from the commencement of the disease, the disorganization of the mucous membrane having gone on during the fever.

2nd. *From the liability of the fever to occur again.* The second injurious effect of the fever is the great tendency of the disease to relapse. During the hot season and the early part of the monsoon of 1842, the men who had suffered from the fever in 1841, were liable to be attacked with a paroxysm of fever on the slightest exertion, exposure or excess, and although the disease was slight and did not prove fatal, yet it injured the constitutions of the men and gave a predisposition to dysentery and other organic diseases, and it will take some time, with residence in a good climate, before this liability to fever is entirely eradicated. The men who suffered from the Walcheren fever, laboured long afterwards under its effects, and even at the distance of twenty years, some who had suffered severely had occasional relapses of fever at certain seasons; among the Regiments who had been at Walcheren and who served afterwards in the Peninsula, many of the men were, upon the first exposure to cold and fa-

tigue, rendered unfit for duty so frequently as not to have one-third of the strength fit for service.

Concluding Remarks.

It is comparing small things with great, to contrast the epidemic fever which occurred among the 17th Regiment with the fever which proved so fatal to the British army in Walcheren in 1810, but I cannot refrain from doing so, because in India disease and death is so familiar, that nothing is thought of losing fifty or sixty men, while by a reference to a well known fact, the extent of the sickness in the 17th Regiment will be more justly appreciated.

In one of Deputy Inspector Marshall's papers on the statistics of the British Army, I find, that at Walcheren, taking the mortality among all ranks, 10 per cent died by disease and killed, while in the 17th during eight months, eight per cent died from fever and dysentery alone. One man died for every 19 cases of the Walcheren fever treated, while in the 17th one man died from every 23 cases of fever treated. On the 1st February 1810, among the corps which returned to England from the Scheld, 15 per cent were sick; while in the 17th during October between 30 and 40 per cent were sick.

Article. VII.

Annual Report of the 2nd Battalion, Bombay Artillery, stationed at Fort George, for the year 1841. By T. Robson, Esq.

Presented by the Medical Board, May 1842.

The aggregate of cases exhibited in the subjoined * abstract is formed of diseases of a general character, no epidemic nor indeed any peculiarly prevalent disease having appeared during the year.

The aggregate strength at Head Quarters for the whole year was 2892; of this number 722 cases were treated in hospital, which is just 24.96 per

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* Strength	113	
Included in the Return on the 31st December, 1841		113
Absent on command beyond the Division		232
Total		345

Number of Sick.

Remained 31st December 1840		35
Admitted in 1841		687
Discharged		671
Died in Hospital		21
Remaining 31st December, 1841		30
Average daily number of Sick for the year		36½
,, Number of Convalescents		0
Died without receiving Medical treatment		1
Changes since 31st December 1840.		
Recruits joined Artillery	408	
,, ,, Infantry	791	1199
Discharged from the service on account of Disease		
Discharged from the service on account of other causes		
Invalided		9
Pensioned		11

Prevailing Diseases, Dysentery Fever, Rheumatism.

cent, or one in every four. Of 722 treated, 21 died, which gives 2.9 per cent, or one in rather more than 34.

By a comparison with the two preceding years, it will be seen that the total amount of sickness was rather less this year, and the proportionate degree of mortality greatly less than the former. The proportion of cases treated to the whole strength in 1839 and 1840, I am unable to exhibit, as I cannot readily obtain the numbers at Head Quarters for those years. But the annexed tabular form will exhibit the decreased rate of mortality during the past year, as compared with the two immediately preceding.

	No. treated	No. died.	per centage of deaths to No. treated.
1839	787	43	5.38 or 1 in 18
1840	840	58	5.95 or 1 in 17 nearly.
1841	722	21	2.9 or 1 in 34 2-5ths.

Of the above 21 deaths, eight took place in January and the early part of February, previous to my joining the Battalion, and of whom I know nothing, and two patients were transferred in a hopeless condition; one of whom died towards the end of February and the other early in March.

The remaining eleven fatal cases were as follows:—

In *April*, Dysentery	1	
——— Peritonitis	1	2
May, Apoplexy or coup de soleil		1
September, A recruit for the Infantry who had been ill the whole voyage out with softening of the brain	1	
——— Delirium Tremens	1	2
October, A worn out man from China, of Cachexia		1
November, Chronic disorganization of the Liver	1	
Cachexia and Dropsy in a man from Aden	1	
Remittent Fever	1	
Pericarditis	1	4
December, Remittent Fever		1
Total		11

Of the eleven it will be seen that four were chronic cases, affording little, if any encouragement from their first arrival, and the case of coup de soleil was of that intensity which proved rapidly fatal in a previously most healthy subject.

The disease which is numerically greatest, is fever. Of remittents and

intermittents combined 123 cases have been treated ; this number givies 17 per cent or $\frac{1}{6}$ of the whole.

Remittent Fever. — This disease claims the first notice. The cases have not been numerous but some few have been severe. The worst cases have been such as have presented at the commencement no very strongly marked symptoms, but on the contrary wherein these have been comparatively mild, though unyielding to treatment, and wherein the patients have usually considered themselves to be less seriously ill than the existing symptoms indicated; frequently complaining of languor and weakness rather than of decided illness, and saying that if they could get rid of their thirst and recover their appetite they should be well. In many of these cases the patients have resisted the impressions of disease for three or four days until unable longer to bear up against increasing loss of nervous energy, they have then for the first time presented themselves at hospital.

In such cases the complaint is usually made of general indisposition rather than of any very particular illness ; but the patient's appearance is unfavorable, the features are contracted, and the countenance has a character of depression ; the state of the tongue is various, it may be much loaded, or merely rough, while occasionally it is found quite clean and moist ; there will probably be no headache, but there is urgent thirst, and on taking the wrist it is with surprise the pulse is found to be accelerated to a rate far beyond that which the patient's statement has led one to anticipate. The action of the bowels, it may be, has continued to be regular, and the condition of the urine has commonly not been noticed.

On subjecting such a patient to the usual treatment for mild remittent, the feeling is that of disappointment at the unyielding character of a train of symptoms of no urgent severity, rather than of alarm for any one strongly developed symptom. The existence of headache may continue to be distinctly denied ; there may be no evidence of congestion in, or determination to, any one of the abdominal viscera ; but the fever continues, the remissions become more obscure, and now an inordinate degree of heat about the forehead or vertex may be detected by the hand, while as yet no complaint either of heat or pain in the head has been made by the patient, whose mind appears calm and composed, and intellectual powers remain up to the period undisturbed ; but shortly afterwards he becomes incoherent, muttering and talking to himself, but still answering with correctness when questions are put to him ; the pulse increases in rate and loses strength, indications of cerebral oppression rapidly advance, and the pa-

tient shortly dies. Such is the outline of a form of disease not unfrequently met with, and which the experience of Dr. Davis in Bombay, which was of some years continuance, led him to consider as the endemic of the place; but the fatal tendency of which, marked as it is by a specious mildness of character, may be commonly averted by an active adoption of such means as tend to restore equilibrium to the disturbed balance of the constitution.

But, as distinct from the foregoing, remittent fever has been frequently marked from the commencement by some prominent symptom by which the attention of the most superficial observer would of necessity be arrested. There has been occasionally severe headache, or headache which has been of long continuance prior to seeking advice; or great and distressing irritability of stomach with bilious vomiting; or again so much pain and tenderness in the right side as to leave it for a while a doubt whether the case should be primarily considered remittent fever or acute hepatitis. In these instances the plan of treatment is far more obvious than in those insidious cases to which I have referred above; and will, when vigorously carried out, usually lead the patient to an early favorable result. I was particularly desirous to have laid before the Medical Board the case of James Leonard, which occurred very shortly after I received charge of the medical duties of the Battalion, but unfortunately the case, which was copious and very interesting, cannot be found amongst the old diaries, although they are statedly made up according to their dates; but it appears that one of the evil practices into which the establishment had fallen previous to my joining the Battalion was that of the apprentice boys tearing up old diaries for their own use. Failing to obtain the case of the above named patient, in illustration of my remark, I have subjoined the case of John Flannagan, which is peculiarly interesting on this point; namely, that although during the whole period of his continuance in hospital he made no reference to his side, and careful examination over the liver could not detect any evidence of that organ being in a morbid condition, he returned to hospital a few days after his discharge, and just a fortnight from the period whence he may be considered to have been convalescent, with a well marked case of acute hepatitis, which ran a lengthened course of much severity and detained him in hospital for seven weeks from his re-admission.

Of Intermittents. It may be briefly remarked that the prevailing type has been quotidian, and in these cases quinine has manifested its wonted efficacy. I have usually found a scruple given early in the morning in five grain doses for four successive hours, sufficient to arrest the disease; if not the first day of its exhibition very commonly it would do so

on the second. Where the paroxysm has been expected early, so that four hours for the administration of remedy could not be calculated on, I have given three 8 grain doses in consecutive hours with the same success. I have commonly remarked that where the return of the paroxysm has been thus prevented, the patient has experienced copious perspiration continuing through the period during which the attack would probably have lasted, but in other respects has felt well and comfortable.

Hepatitis acuta. Of this disease 46 cases have been treated, giving 6-37 per cent or nearly 1 in 16. In every instance since I have been with the Battalion it has yielded to active antiphlogistic treatment, and no fatal case has occurred. The case of Joseph Jones which was severe and possessed great interest, is appended. At one period the indications of suppuration having taken place, were so strong, that I was impressed with a conviction that such was the fact, but the opinion was erroneous and the patient, though rather long ill, completely recovered.

Dysentery. Of this disease 61 cases are recorded. This is 8.48 per cent, or about 1-12th of the admissions. From the reports of my predecessors I was led to expect that at the commencement of the cold weather towards the end of the year, dysentery would become prevalent. Surgeon Gray particularly reports upon a very severe form of this disease which prevailed most extensively during the months of October, November, and December, of the year 1839 in which he had charge. It has not, however, been so this year, but on the contrary since the accession of the cold weather the cases of this disease have been few and tractable. During the course of the year some very severe cases have been treated, one of which, (and wherein the patient had a second attack) is appended in illustration.

Rheumatism. Although not a fatal, this is nevertheless a very troublesome disease, of which 98 cases stand on record, making rather more than 12 per cent of the total of admissions or 1 in $7\frac{1}{3}$.

Delirium Tremens. Of this disease 24 cases have occurred, making 3-3 per cent of the whole or 1-30th of the diseases treated; of the above number one died before I joined the battalion, and one subsequently, making the fatal cases 1-12th of the whole.

But although the effects of intemperate drinking have not been shewn in a greater number of instances in that aggravated form in which they appear in this disease, in a minor degree they are seen in a large proportion of those who are admitted into hospital. Men in the prime of life, of robust frame, and not under the immediate effects of liquor, are found unable to hold the hand steady without the most marked tremors; there is a character of irritability in the pulse unconnected with any ailment the men

may have ; and the tongue is frequently loaded ; exhibiting in the toute ensemble of the man the pernicious effects of the constant stimulation of the system by ardent spirits ; and by which the greater number of diseases are more or less influenced, and always to the disadvantage of the patient. Were it not for the abuse of intoxicating drinks my experience with the artillery in Fort George (limited I allow it to be) leads me to believe they would be as healthy a body of men as any Europeans in the Presidency. In this point of view, therefore, as well as from moral considerations, I cannot but deem the canteen system, which sanctions a man's gulping down twelve ounces of undiluted ardent spirit every day, (a quantity far greater than I have ever seen necessary to be given in the severest form of disease, and which common sense assures us can have none other than a most mischievous effect upon the human constitution) an injudicious system, but little, if at all, calculated to accomplish the end for which it was arranged and is still supported.

In conclusion I would beg leave to draw the attention of the Medical Board to a subject which I believe has on former occasions been laid before them, namely, the seeming inconsistency of denying to the hospital of the 2nd Battalion at the Presidency, which is, in point of fact, a depot hospital, for the accommodation of all * the sick of the Company's European troops, an establishment equal to that which is allotted to the 1st Battalion at an out station, not subject to the contingencies of recruits, unfits, &c. which frequently constitute the majority in the hospital of the 2nd Battalion ; and I would therefore respectfully urge the Medical Board to again bring this subject to the favourable consideration of the Government in the hope of obtaining that which is so much required, namely, a first class establishment for the hospital of the 2nd Battalion.

* The few men of the Staff who go to the European General Hospital, form a trifling exception.

Article VIII.

A Letter addressed to the Superintending Surgeon of the Deccan Division, on the use of the Iodide of iron. By D. Grierson, Esq.

Presented by the Medical Board, May, 1842.

Iodine has been known as a medical agent for about 30 years, yet its introduction into practice has been greatly slower and its use much more limited than its unequalled excellence demanded. Nor has the readiness been evinced to adopt its new forms, which might have been expected. Thus Iodine identified by Dr. Coindet, soon after its discovery by M. Courtois, with a medicinal agent he had previously resorted to with success, was used by him and by others following his example and recommendation eight years on the continent, before it was introducted into Britain by Sir A. Halliday. Ten years more had not sufficed to establish it in general favour when the authenticated facts and observations of M. Lugol sanctioned by the approval of the Academie des Sciences, proved the medicine to be possessed of such power over a class of peculiarly obstinate diseases as no other could lay claim to. Again it may be observed that the forms of the medicine relied on by Lugol are very simple, the metallic preparations being sparingly recommended and chiefly for one class of diseases.

In perfect accordance with the practice elsewhere, has been that in the Honorable Company's service,—only one combination of Iodine, the Hydriodate of Potassa is now at the disposal of executive medical Officers,—and it is with a view to remedy this deficiency, I wish to offer some remarks on another combination,—the Iodide of Iron.

This medicine was made known to the profession in 1834 by Dr. A. Thomson; it has now a place in the London Pharmacopæia; its mode of preparation is stated both in Dr. Thomson's work and in the Pharmacopæia, so that no reference to it is needed. Its medicinal properties are fully stated by Dr. Thomson and accord with my own observation, I shall therefore merely confine myself to a few facts touching my own experience of the remedy.

My first knowledge of the Iodide of Iron was in 1838, when it was prescribed for myself by Professor Carswell. Though the Hydriodate had previously failed, the most immediate beneficial effect followed. I have since used and continue to use the medicine occasionally, and as I believe that I should not have continued able for the performance of my duty without its use, I naturally prize it very highly.

2. A man who was in the Poor's Asylum in Malligaum when I received charge, who had long been an incumbent on the charity, and had undergone treatment for scrophulous swellings of the glands of the neck, and pains, swelling, and stiffness of the joints of the elbows and hands, was treated with the medicine, gradually improved in health from that date, and is now following his occupation of carpenter and gaining his subsistence in the bazar.

3. A young sepoy, of the 15th Regiment N. I. long bed ridden from syphilitic rheumatism and cachexia, and treated with so little benefit that he was put on the invalid list, was, when the Regiment left, transferred to my care while waiting for his discharge. He was put under the use of the Iodide of Iron, improved in health, and becoming impatient, was permitted to proceed to Bombay in the hope that he would again come on the strength of the Regiment.

4. A young sepoy of the 22nd who had fallen into much the same state as the former, and whom I had at one time thought it would be necessary to recommend for discharge, by means of the same medicine, recovered and is now doing duty in the ranks.

5. A young boy of weakly habit had necrosis of the fibula. In due time the dead portion of bone was removed, still no healing followed. After much delay and the use of other medicines without good effect, he began to take the Iodide of Iron and quickly recovered.

6. A sepoy of strong make and healthy appearance being on leave, was attacked with necrosis of the lower jaw. When first seen there was much swelling, fetid discharge and uneasiness. Without any attempt at removing the necrosed portion of bone, he began the use of the Iodide of Iron. Shortly the necrosed bone quite detached was lifted out by the forceps, and the complete recovery was effected much more quickly than I had even hoped.

I have used the medicine in many other cases, but these are the most remarkable; and if they be considered few, I hope it may be borne in mind that the limited field of a native Regiment may have contributed to the result.

It may be difficult to convince any one that the same good result would not have followed the use of the Hydriodate in the cases above mentioned, and imposible to prove it; I decidedly believe they would not, at all, in some of them, and in none of them so quickly. But the medicine has in other respects the superiority over the Hydriodate; it is strongly stimulant and roborant, exciting all the secretions especially those of the mucous membranes; hence it improves the appetite and quickens the alvine discharge, thus beneficially influenciug the whole system. In doses in which it produces its full effect it is followed by no unpleasant symptom. On the other hand the Hydriodate does not produce on the system the beneficial effects of the other, and if pushed to a full dose is apt to disturb the head and cause an unpleasant profuse lachrymation. Besides, the Hydriodate is easily adulterated and has been adulterated in the proportion of 70 to 30; the other combination cannot be adulterated.

Besides cases analogous to those mentioned, there are various other diseases peculiar to the East and of great intractability, in which the Iodide of Iron might, I apprehend, prove of use. Those who have been for some time in the East must be familiar with the names, if no more, of the Bussorah date mark and the Broach or Guzerat boil; latterly too we have become acquainted with Scinde sores, and the neat and graphic memoir of *M. Chedufay has introduced to us the scourge of Yemen, (Plaie de Yemen,) more commonly known as the Aden ulcer. It may probably be known also to many that the bulk of invalids annually transferred to India from the straits of Malacca, consists of those labouring under bad ulcers. In all these instances we have local debility and diseased action of a peculiar kind, resisting ordinary treatment and in most there is also cachexia or general debility. Such are just the cases to which the remedy in question is adapted, and should it, as anticipated, be found adequate to their cure, it will magnify the triumphs of the healing art, extend the benefits medicine has conferred on afflicted humanity, and impart joy to every benevolent mind.

It will be understood that the object of these observations is to induce the Medical Board to take steps to put at the disposal of Executive Medical Officers the Iodide of Iron, and I conclude with respectfully begging to recommend this to be done.†

* Transactions of Medical and Physical Society, No iv.

† *Note by the Secretary* -- This preparation, it is believed, is now procurable from the Medical Stores

Article IX.

A letter on the Fever which prevailed at Bankote in the S. Concan in 1841, *addressed to the Superintending Surgeon of the Presidency Division.* By T. Waller, Esq.

Presented by the Medical Board January, 1842.

I have the honour to inform you that in compliance with the instructions contained in your official communication of the 6th ultimo, I have seen some of the cases of fever prevailing at Bankote, and now beg to lay before you the following remarks as to its nature and probable cause.

It may be briefly described as an obstinate intermittent, commencing with rigor which lasts for variable periods of from one to twelve hours, generally ending in diaphoresis; the Tertian, and Quartan types mostly prevail; the duration of the fever is uncertain, some patients recovering in a few days, others on the contrary lingering on for months, and in most of the latter, visceral complications are observed, chiefly considerable enlargements of the spleen.

I visited several persons both adults and children, all suffering from the prevailing endemic, they were able to move about, but looked sallow, and thin, with white furred tongues, quick, weak pulses; dry, but not hot skins; and most of them with affections of the spleen, and tumid bellies; five-sixths of the cases are of this nature.

Remittents occur, resembling those generally met with in other parts of the Konkun; in these there is little or no secretion from the skin; and in many cases delirium. They are the most fatal cases, but fortunately the proportion is small when compared with the number of simple intermittents.

I do not believe the fever is contagious, and confess myself unable to point out any cause as certain whereby to account for the continued prevalence of the disease, seeing that hundreds of places very similarly situated, are, comparatively speaking, nearly exempt from fever; at all events, of an endemic character.

It is only within the last three or four years that the disease has been so prevalent, and it is extremely difficult to point out any local cause which

has not been in operation for a much longer period, this it is most important to bear in mind ; the only two exceptions, that occur to my mind, are, the probable increase of population, and the decided growth of large trees in the midst of the town; the latter must, I think, be prejudicial, not only by preventing a free circulation of air, but by the constant fall of decaying leaves, decomposing during, and after, the monsoon ; but then it is right to add, that nearly every Konkun town, is similarly situated ; the increase of population I have no means of accurately ascertaining, but the records of the Collector's office, would no doubt furnish correct data.

Some land formerly under cultivation, by the breaking down of embankments, is now exposed to the action of salt water, but the surface thus acted on, is too small to generate such quantities of noxious miasmata, as would be capable of producing fever.

The gradual enlargement of a very extensive sand bank at the mouth of the river, has been supposed by some, to act prejudicially by retarding the exit of fresh vegetable matter brought down by the Savitree river ; but after actual inspection, I do not imagine it has any baneful influence ; or if any, but in the slightest degree, for the waters are, comparatively speaking, free from any visible admixture, and the bank itself is composed of pure sand, nor is there any noxious effluvia perceptible.

A few miles inland from the opposite bank of the river, the Hubshee's territory is met with, clothed with dense jungle, and presenting a great contrast to that on the Bankote side, which is completely stripped of vegetation ; now the land winds blowing over the former, have, I think, a prejudicial influence, as they lower the temperature very considerably during the night, and towards morning , while the bare naked hills around Bankote becoming highly heated during the day time, tend considerably to increase it, these extremes cannot but be injurious to health, and I think this to be *one* of the most likely causes of the prevailing sickness ; it must, however, be borne in mind, that for four months, when the south-west monsoon prevails (and there are no land winds) that still the same form of fever is met with.

The inhabitants as far as I have examined them, state, that there is no change observable, in the quality of their water, nor in fact are they able to assign any cause for the sickness, but call it simply a visitation of the Almighty ; all classes, whether Mussulmans or Hindoos, suffer alike, both rich and poor.

With the exception of the close proximity of the jungly district to the northward, it must be borne in mind, that all the causes above enumerated, are in operation in almost every Konkun village. The guard of Rutna-

giree Rangers over the treasure, are constantly suffering from fever, here the cause seems more obvious; they are stationed in a small fort completely overgrown with jungly grass and weeds, and an order should be immediately given that these may be burnt or removed.

The village of Vehlass in which fever of an intermittent type at present principally prevails, is embosomed in a dense grove of palms, plaintain, and other fruit trees: the soil is nearly two-thirds pure sand, with one-third of decomposing black vegetable mould. The natives can point out no cause for the fever which has not existed for the last twenty years, but I am of opinion, that a want of due circulation of air, and the accumulation of decomposing vegetable matter, must aid at least, in producing disease.

I beg in conclusion to state that the inhabitants of Bankote, have exerted themselves to a certain extent, and cleared away a great deal of refuse matters from their streets, and a gentleman now on the spot states that the town is, if any thing, cleaner than it was ten years ago.

I am informed that the mortality has considerably diminished, in Bankote, Vashevee, and Vehlass; and the principal form of fever now observed is a tertian intermittent; several of the villages in the Hubshee's district near Bankote suffer also from fever, and of the same form; and this would lead us to infer that the cause is somewhat extended. I have above alluded to the increase of population as a cause of sickness, I think it may act prejudicially by causing a greater crowding of the houses, &c.

I regret that I have not been able to point out with confidence, any *certain* cause of the prevailing endemic, but hope that some little information may be conveyed by the above observations (made on the spot,) which I now do myself the honor to forward, for your information.

Bankote, 12th *December*, 1841.

Article X.

Remarks on the practice of Transfusion and its application in the treatment of Hæmorrhage, &c. deduced chiefly from recorded cases. By John Peet, Esq.

Presented December, 1842.

It has long been an acknowledged truth that remedies are often eulogized, not so much from a reference to their actual worth, as to the reputation which they acquire, by their apparent success in a few cases ably reported. In like manner a particular mode of treatment sometimes meets with the censure of the profession, and prematurely falls into disrepute, without the causes of its failure being fully understood, or the circumstances influencing its application, sufficiently taken into consideration.

Amongst the remedies, which have thus lost credit, there is none more prominent, than the operation of transfusion, and it is chiefly with the view of endeavouring to ascertain, by an investigation of the recorded cases, whether the now avowed neglect of the practice, is owing to its being really useless, that this short paper is composed.

Nearly two centuries have elapsed since the proposal of re-organizing the system by the adoption of transfusion, was received with the greatest applause. The discovery of the circulation of the blood, had at that time given rise to the most extravagant expectations, and the utility of the remedy was viewed with unexampled credulity. Diseases totally differing in their nature, were hastily submitted to its use; it will consequently, be hardly a matter of surprise that in a very short period, it was entirely discarded. Accordingly we find, from the middle of the 17th, to the beginning of the 19th centuries, with the exception of a few experiments upon animals, instituted in the year 1785, by Dr. Harwood, Professor of Anatomy at Cambridge, no notice is taken of transfusion.

In the early part of the present century, the practice came again under investigation, and about the year 1825, Dr. Blundell clearly demonstrated

that blood might be passed by means of syringe from one animal to another of the same species, without danger or inconvenience to the animal receiving it, or without the blood being seriously injured by its transit through the syringe.

Trials upon the human subject soon followed, and it appears the first successful case of its performance in England, occurred in September 1825.*

There is a marked difference in the practice as then introduced, compared with the mode in which the operation was performed at an earlier period. In all the preceding trials, an artery of an animal, was connected with a vein of the patient, and calves and sheep were usually selected to supply the blood. † Modern Physiological inquries have shown, that, unless the blood be taken from an animal of the same species as the one into which it is to be injected, little, if any, benefit can be expected. Consequently, since this point was clearly proved by a series of experiments, a syringe has been always employed, amd human blood transfused whenever the operation has been tried as a remedial agent.

From the year 1825 up to the present time, I have been able to find recorded, twenty-two successful, and thirteen unsuccessful cases.

Of the successful cases: there was one of Hæmorrhage following the operation for strabismus; one of Hæmorrhage during the amputation of the thigh, and one of Hæmorrhage from the bursting of the vena saphena. There were two cases of collapse arising from excessive Menorrhagia. Six cases of hæmorrhage before, and eleven of Hæmorrhage after delivery.

The unsuccessful cases are of a more diversified nature; they are shown in the following table.

Table No. I.

	Number.	Nature of Cases.
	1	Hæmorrhage following compound fracture of leg.
	1	Hæmorrhage following amputation of thigh, the external iliac having been tied before transfusion was adopted.
	1	Hæmorrhage from the bursting of an artery.
	1	Collapse produced by large bleedings during an attack of Puerperal fever.
	1	Incipient Hydrophobia
	1	A child in a state of asphyxia removed from the mother by the Cæsarean section.
	1	Hæmorrhage following amputation at shoulder joint.
	1	Hæmorrhage after expulsion of Placenta.
	1	Hæmorrhage during the birth of Placenta.
	1	Hæmorrhage during the birth of Placenta.
	2	Hæmorrhage both before and after the birth of Placenta.
	1	Hæmorrhage from Placental presentation.
Total	13	

* Lancet, 17th September, 1825.

† Cyclopedia of Medicine, article Transfusion by Dr. Kay.

From this table it will be seen that there were only seven cases of Hæmorrhage alone, the remaining six having various complications.

* In the 1st case, viz. of Hæmorrhage following compound fracture of the leg, the stump was found after death in a state of gangrene. Transfusion was twice adopted, and was at first productive of considerable re-action.

† The 2nd case occurred in a child eight years of age. Amputation was performed for extensive Necrosis of the Femur. Secondary Hæmorrhage took place on the eighth day. It was at first stopped by compression, but it subsequently returned, when the external iliac was tied. He rallied for about an hour after the transfusion, and then rapidly sunk.

‡ In the 3rd case, the patient had ceased to respire, three or four minutes before the operation was performed.

§ The 4th case was one, in which the woman was evidently sinking. No decisive effect was produced.

‖ In the 5th case, the patient had been bitten four weeks previously. There was some diminution in the dread of fluids after the injection, but the relief was very transient.

¶ In the 6th case, about two ounces of venous blood were injected into the umbilical vein. Some movements in the face followed.

** In the 7th case, the subclavian artery had been twice tied, without stopping the bleeding. Sixteen ounces of blood were transfused. It is remarked that the blood had scarcely reached the heart, when the patient was seized with a fit of suffocation, and immediately died.

†† In the 8th case, the woman had ceased to respire five minutes before the performance of the operation.

‡‡ In the 9th case, the patient was evidently sinking, but more than four ounces could not be obtained from the lady, who offered to supply the blood.

* Mr. Green, Lancet, October 12th, 1829.

† Medical Gazette, April 24th, 1840. Report of cases in the Edinburgh Royal Infirmary.

‡ Blundell's Physiological Researches.

§ Blundell's Physiological Researches.

‖ Dr. Blundell, Lancet, November 22nd, 1828.

¶ Lancet, November 22nd, 1828. Dr. Dieffenbach.

** Lancet, December 4th, 1830. M. Roux.

†† Blundell's Physiological Researches.

‡‡ Blundell's Physiological Researches.

* The 10th case, appeared to fail, owing to the small size of the syringe which had to be refilled sixteen times. The injection was made into the external jugular vein, and after death a small quantity of air was found in the right side of the heart.

In all these cases there were either complications, or the want of success may be attributed to the mode of performing the operation. In the remaining three however, the causes of failure are not so obvious; they will be discussed in another place.

The following table will shew the length of time, which elapsed, between the cessation of the bleeding, and the commencement of the operation, in thirteen successful, and five unsuccessful cases.

Table No. II.

	Successful cases.		Unsuccessful cases.	
	Number of cases.	hours.	Number of cases.	hours.
	1	½	1	3
	2	1½	1	5
	2	2	1	6
	2	3	1	10
	2	4	1	72
	1	4½		
	1	6	5	Total.
	2	11		
Total.	13			

In tables No. III and IV the state of the different functions is mentioned, in all those instances where this information could be correctly obtained.

Table No. III.

Successful cases.

Number of Case	Circulation.	Number of cases.	Respiration.	Number of case.	Nervous system.
1	Pulse 120 and at times imperceptible.	2	Hurried and attended with sighing.	1	Great restlessness with frequent syncope.
1	Pulse had been imperceptible at wrist and carotids for 2½ hours.	1	Short and hurried.	1	Complete syncope, urine and feces, passed involuntarily.
1	Scarcely perceptible, 140 thready and small.	1	Thoracic and slightly sterterous.	1	Impossibility of deglutition or articulation.
1	Fluttering and occasionally not to be felt.	1	Rapid and embarrassed; breath cold.	3	Great restlessness.
2	Pulse at wrist and carotids not to be felt.		Difficult with a sound of air passing through mucus.	3	Perfect insensibility.
2	Pulse at times imperceptible.			1	Jactitation.
4	Pulse not perceptible.			2	Vomiting.
6	Barely perceptible.				

* London Medical and Physical Journal, August 1826.

Table No. IV.

Unsuccessful cases.

Number of case.	Circulation.	Number of case.	Respiration.	Number of case.	Nervous system.
2	Pulse scarcely perceptible.	1	Breathing quick and short.	1	Faintness and at times insensibility.
1	Pulse slow, and intermitting, with two quick pulsations, full and sharp.	1	Greatly hurried.	1	Great restlessness and jactitation.
		1	Difficult.	1	Delirium.
				1	Extreme restlessness; loss of the power of swallowing.
1	Pulse weak and fluttering; often imperceptible.			1	Restlessness.
1	Pulse perceptible only at intervals.			1	Extreme collapse and jactitation.
1	Pulse imperceptible at wrist.			1	Talked incoherently; slight convulsive twitches.

1	The woman had ceased to respire five minutes before the operation was performed.
1	The woman, had ceased to respire three or four minutes.
1	Evidently sinking
1	This woman was in that state which as "men of observation know, is the certain precursor of death."
1	Extreme collapse; symptoms of pleuritis.

The quantity of blood transfused, of course varied in the different cases. It is shown in the following table.

Table No. V.

Successful cases.		Unsuccessful cases.			Successful cases.		Unsuccessful cases.	
Number of cases.	Quantity.	Number of cases.	Quantity.		Number of cases.	Quantity.	Number of cases.	Quantity.
	oz.		oz.			oz.		oz.
2	2	1	2		2	8	1	18
2	4	1	4		1	9	1	29
1	5	3	6		1	10 or 11	—	
1	5½				2	12	13	Total.
2	6	1	8 or 10		2	14		
2	6½	1	10		1	22		
1	6 or 7	1	14		1	24½		
1	7 or 8	3	16		—			
				Total.	22			

Thus it will be seen, that the largest quantity of blood transfused in 22 successful cases, was 24½ oz. the smallest 2 oz. The average in this number of cases appears to be a little more than 8 oz.

In the unsuccessful cases, the largest quantity injected, was 29 oz., the smallest 2 oz. The average about 12 oz.

The quantity necessary to affect the system will be seen in table No. VI., consisting of 15 cases.

Table No. VI.

	Number of cases.	Quantity.
		oz.
	4	2
	1	3½
	4	4
	3	6
	2	8
	1	12
Total	15	

The immediate effect of transfusion upon the different functions is a point of considerable interest. We should á priori expect the circulating and nervous systems, to be much influenced, which experience confirms.

The first sensible alteration is generally in the pulse. From being weak, quick, and in some cases imperceptible, it becomes slower and more distinct.

* There is one curious case recorded by Dr. Ingleby, where the pulse was not perceptible in the arm into which the injection had been made, for several hours after the operation.

† Occasionally a slight intermission is observed; this appears to have occurred in one case, when only four ounces of blood had been transfused.

In experiments upon animals, I have found, that the action of the heart is sometimes much increased, and attended with more or less irregularity. By proceeding with the injection more gradually, this unfavorable symptom has generally subsided.

The diminution in the frequency of the pulse is often very marked; in some instances rapidly falling from 130 or 40, to little more than 100 beats in the minute.

The respiration is very quickly affected; the breath becomes warm, and the breathing slower and less laborious.

The effect of transfusion upon the nervous system, is equally well developed.

In several instances sensibility and speech, which had been previously quite lost, were almost immediately restored, and the patients who had been but a short time before, in a state of perfect unconsciousness, sat up and

* Practical Treatise on Uterine Hæmorrhage.

† Lancet, Sept. 17, 1825.

spoke. Occasionally a degree of restlessness is produced. This occurred in the case (before alluded to) in which the pulse intermitted.

* In one case after four ounces had been injected, there was an approach to syncope, the pulse fell, and there was sighing, with efforts to vomit. These symptoms ceased after the expiration of a few minutes.

Vomiting occurred in one case during the operation, but this may have been rather one of the symptoms resulting from the Hæmorrhage, than the effect of the transfusion.

The phenomena now mentioned, are those which have been found to attend the operation in some of the cases, where it has been successfully performed.

From the number of unsuccessful cases, there are two instances in which it was thought to have hastened death, one has been already alluded to as recorded by M. Roux, the other will be presently discussed.

In M. Roux's case, it appears the blood had scarcely reached the heart when the patient died by suffocation.

† In one other instance, slight sickness occurred, and towards the end of the operation, there was an irresistible desire to change posture.

The post mortem appearances where the operation has been unsuccessfully tried, have not been often described.

‡ In one case a small quantity of air was found in the right side of the heart.

§ Dr. Collins observed, that the right auricle was distended with fluid blood, the other cavities of that organ were empty; the injected blood appearing to have passed no farther than the right side.

Having given an outline of the cases which are recorded, the question now presents itself as to whether they are sufficient in number to prove the utility of the practice.

It will be remembered that there are twenty-two successful cases, brought under notice; it is not improbable, there may be some few others, which have escaped my observation. The unsuccessful on the other hand, only amount to thirteen, and it has been already mentioned, that there are only three in which the failure is not owing, either to the peculiar nature of the case, or to the mode of performing the operation. Provided these are all the instances where transfusion has been adopted without success, the proportion is

* Mr. Jewell, London Medical Journal, October, 1825.

† London Medical and Physical Journal, August, 1836.

‡ Mr. Jewell, London Medical Journal, October, 1825.

§ Practical Treatise on Midwifery.

decidedly in favor of the practice, but I am not unaware, that the custom which unfortunately prevails of withholding unsuccessful cases, whilst those of a different kind are eagerly brought forward, will render any argument founded upon the relative proportion of those reported, of little importance.

A better and more correct inference may perhaps be deduced, from a consideration of the symptoms, and the state into which the patient is reduced before the operation, assisted by the evidence which is afforded, by the effect of transfusion in producing reaction. In order to make this point as clear as possible, I will give a short account of some of the more severe cases, in which the practice was successfully adopted.

Case No. I.—Reported by Mr. Brown in the London Medical Journal, for February 1827. A woman aged 30, attacked with Hæmorrhage before the expulsion of the placenta continuing for a few minutes. The injection was made about two hours after the cessation of the bleeding; the usual stimulants, viz. brandy, camphor, æther, &c. having been previously given. The pulse was neither to be felt at the wrist, nor in the carotids. The respiration was hurried, thoracic, and slightly sterterous, and the countenance was deathlike, with coldness of the surface. The eyes were closed and the pupils fully dilated. There was perfect insensibility. Six ounces and a half of venous blood were transfused: after 13drms. there was no change. Five minutes were allowed to elapse when 15drms. were injected. The pulse could then be felt at the wrist, and the respiration became more free; after five ounces had been introduced, the pulse was 120 and regular; there was slight sensibility upon touching the cornea, and the pupils acted upon exposure to light. At the termination of the operation the pulse was 120 and equable, and there was some restlessness.

In one hour and ten minutes, from the commencement of the transfusion, she noticed all around her and spoke with a firm and distinct voice. She subsequently suffered a good deal from febrile disturbance, but the reaction was permanent. The blood was transfused at four different times, and five or ten minutes allowed to elapse between each injection. Between the 3rd and 4th injection half an ounce of brandy was given.

Case No. II.—Reported by Mr. Furner in the Medical Gazette, for July 4th, 1835. A woman aged 37, whose thigh was amputated for medullary sarcoma of the knee. There was considerable Hæmorrhage during the operation, producing a state of alarming collapse. The usual remedies were given without effect, and the operation performed almost immediately. The pulse was imperceptible both at the wrists, and in the carotids,

and there were other symptoms of extreme collapse. Five ounces of blood were transfused. In the space of a minute or two pulsation gradually returned, and the skin became warm and less clammy. Further stimulants were not required. No unfavourable symptoms occurred, and the stump healed in five weeks.

Case No. III.—Recorded by Dr. Oliver, in the Edinburgh Medical and Surgical Journal for October 1842. A woman aged 42, attacked by Hæmorrhage after delivery, continuing for some time without any effectual means being used for its suppression. Transfusion was adopted about eleven hours after the cessation of the bleeding, the usual stimulants having been administered in the interval. The pulse had neither been perceptible at the wrist, nor in the carotids for two hours and a half. There was perfect coma, and the surface was blanched. About twenty-two ounces of blood were transfused. Until twelve ounces had been introduced there was no change; the pulse then became perceptible. After twenty-two ounces the restoration was complete, there was a return of consciousness, as well as of speech. No unfavorable symptoms following the operation are mentioned, and it does not appear that any further stimulants were necessary.

The collapse in these three cases was exceedingly great, and in the third case it is interesting to observe, that no amendment took place, until a large quantity of blood (twelve ounces) had been injected. It is said, this patient had none of the more prominent, and distressing symptoms, which so frequently follow large bleedings.

By referring to table No. III. it will be seen, that from amongst the remaining nineteen cases, there were several in which the pulse had entirely left the wrist, whilst in others it was only occasionally imperceptible, and in some it was distinct.

It is generally considered as one of the strongest arguments, adduced by those who deny the efficacy of this practice, that it is impossible to distinguish the cases of collapse which are recoverable by the ordinary remedies, from those which would be necessarily fatal; and it has been not unfrequently said, those instances in which the operation is reported to have succeeded, would have been restored by nature, or the means usually employed for producing reaction. That in some of the recorded cases there is a foundation for this assertion, appears probable, as for instance, when the pulse was tolerably distinct, but that it is generally applicable to the operation of transfusion, is, I think, incorrect; and in the three cases an account of which has just been given, it would betray a degree of scepticism to deny that transfusion had saved life.

If it be asserted, there are no phenomena resulting from excessive Hæmorrhage, which denote a fatal termination, it will be impossible to come to any satisfactory conclusion upon the subject of transfusion, as it may be said of every case, in which the practice appears to succeed, that it would have recovered without it. If on the other hand, it be admitted, that a class of symptoms may be induced, constituting a case of such danger, that restoration cannot be effected by the measures generally adopted, it appears to me, the three which have just been mentioned, are unquestionably of this kind.

The conclusion I would venture to draw from a consideration of these cases, is, that transfusion has succeeded in producing reaction, when death would have been the inevitable result, had the usual stimulants been alone given.

Proceeding in the inquiry, I will now advert to the three cases before alluded to, in which the operation failed.

Case No. I. Recorded by Dr. Collins in his Practical Treatise on Midwifery. Hæmorrhage occurring after delivery before the expulsion of the placenta. It was calculated only two pints of blood were lost. The usual stimulants were administered, and heat applied for ten hours after the cessation of the bleeding. The pulse was weak and fluttering, often imperceptible, with difficult respiration. There was extreme restlessness, and loss of the power of swallowing. Ten ounces of blood were transfused. The patient died a few minutes after the performance of the operation. Dr. Collins remarks, that the injection did not appear to have any more marked effect, than that of occasioning indistinct muttering.

Case No. II. Also recorded by Dr. Collins in his Practical Treatise on Midwifery. Hæmorrhage, both before and after the removal of the placenta, occurring in a woman thirty years of age; stimulants were used, heat applied, and the operation performed three hours after the bleeding had stopped. The pulse was perceptible only at intervals; there was restlessness, and the extremities were cold. From eight to ten ounces of blood were injected. No effect was produced, and death occurred a few minutes after the operation.

Case No. III. Reported by Dr. Ashwell in Guy's Hospital Reports Vol. IV. 1837. Hæmorrhage from placental presentation occurring three times before delivery, the child being removed by turning. There were the usual symptoms of extreme collapse. The injection was made twenty-four hours after delivery, but three days subsequent to the last gush of blood;

Note.—It was thought, death was rather accelerated by the transfusion

seven ounces were at that time transfused. The amendment was very marked. The pulse became full and distinct, she spoke rationally, and the eyes regained their natural expression. In less than an hour, however, the collapse returned, when seven ounces more blood were injected. Reaction was produced, but not to the same extent as before. She rapidly sunk, and died very shortly after the second transfusion.

In these three cases, the operation seems to have failed, without the cause being very obvious.

The first of Dr. Collins' cases, is singular, inasmuch as the patient had only lost two pints of blood ; an amount not larger than sometimes attends what are considered natural labors. In Dr. Ashwell's case, the failure appears marked, but it must be borne in mind, that the first injection was not made, until seventy-two hours after the Hæmorrhage had ceased. A length of time sufficient to allow of a serious change being induced in a vital organ.

It would be extremely difficult to offer any satisfactory explanation of the want of success, attending the adoption of the practice in these three instances. I may, however, remark, that Dr. Collins' cases differ from many of those reported, in the rapidity with which death appears to have followed the injection. Dr. Collins has not decidedly asserted, that death was hastened by the operation; and yet, as the patients died a few minutes after it was performed, it must be, I think clear, either that the injection had a positively injurious action upon the system, or that the collapse had proceeded to an almost unusual extent. In the latter case it would not be an unfair inference to suppose, the failure may be possibly owing to this cause.

In support of the supposition, that the introduction of the blood, had acted deleteriously, there is the case recorded by M. Roux; but this is the only instance I have been able to find where such an effect is attributed to it. In the greater number of cases, where the respiration had not entirely ceased, more or less reaction followed the injection ; and even in the few instances in which no favorable symptoms succeeded, it does not appear that any injurious effects were supposed to attend the adoption of the practice.

Mr. Roux's case was one of an exceedingly complicated nature, and may therefore be left out of the discussion; and as this is the only one which supports the view that the transfusion acted injuriously, it would be more reasonable to conclude, that in those recorded by Dr. Collins, the great extent to which the collapse had proceeded before the operation, may be in some measure the cause of its failure.

Whilst transfusion is viewed as a desperate measure, only to be used as a last resource, the unfavorable cases must frequently have this argument in their favor.

General remarks. Having endeavoured to arrange all the evidence, which is afforded by the recorded cases, both in favor of, and against the utility of transfusion, I may now perhaps be permitted to make a few general remarks upon the subject.

1st. As to the nature of the cases in which transfusion is justifiable. Various states of the system unconnected with the effects of Hæmorrhage, viz. Hydrophobia, Asphyxia, Cholera, &c., have been submitted to this mode of treatment, but not with such success as to entitle them to consideration.

The collapse most frequently requiring transfusion, will be of course that, which is occasioned by Hæmorrhage during parturition; but it will be seen by referring to table No. III. there are two successful instances of its performance, in cases of bleeding from other causes.

The most favorable cases will be those, where there is a sudden eruption of blood from the uterus, followed by a state of extreme collapse.. It is often remarked that although the Hæmorrhage may cease, the collapse will increase, notwithstanding the assiduous use of the most powerful stimulants.

It has occurred to me to be present at two cases of uterine Hæmorrhage which had a fatal termination ; in one death took place in four, in the other in ten hours, after the bleeding had stopped.

2. With respect to the length of time the collapse may continue, without transfusion losing its power of restoring the patient.

Dr. Blundell states that he succeeded in restoring an animal five minutes after apparent death from bleeding, but if a longer period were allowed to elapse, in no case could the animal be resuscitated.

I have repeated Dr. Blundell's experiments upon this point, but without being able to arrive at the same result. I never could succeed in recovering an animal after the function of respiration had been entirely suspended, although I varied the experiments, by injecting fluid into the arterial as well as venous systems.

I will not presume to place my negative experiments in opposition to the positive ones of Dr. Blundell ; but I may perhaps be allowed to mention, that there does not appear to be any instance of reaction in the human subject, following the performance of the operation, when the patients had been in a state of apparent death, although there are three, in which it was tried.

3rd. With regard to the nature of the injected fluid.

Owing to the occasional difficulty of procuring a supply of blood at the moment it is required, as well as to the obstacle, which its rapid coagulation offers to the successful adoption of the practice, it has been considered a desideratum, to find some fluid which might be substituted. Accordingly experiments have been made with water, saline solutions, and the blood of animals; but it has been clearly shewn, that although reaction to a certain extent is produced by them, the effect is very transient.

* Within the last few years, some very interesting facts upon this part of the subject, have been made out, by Prevost and Dumas, Dieffenbach, and more recently by Dr. Bischoff. They all agree, that blood deprived of its fibrine does not lose its vivifying power, and according to Dr. Bischoff, when thus modified, it may be injected from mammalia into birds, without ill effects, whereas if blood from which this constituent is not removed, be used, the bird almost immediately dies with the most violent symptoms of poisoning. But it is a curious circumstance, that although the serum and red particles, may be transmitted from one animal, to another of a different species without bad consequences, yet they have not the power of causing reaction after dangerous bleedings, but if used upon an animal of the same species, blood thus modified will answer all the purposes of transfusion.

In order to make myself certain whether blood deprived of its fibrine may be substituted for that fluid in its natural state, I instituted the following experiment.

At 8 A. M. of the 27th May, 1841, assisted by my friend Mr. Sibson resident Surgeon to the Nottingham General Hospital, I laid bare the carotid of a middle sized full grown dog. Having introduced a tube, the blood flowed very freely until ten ounces had escaped. The animal appeared greatly distressed; the pulse in the leg became perfectly imperceptible, and the action of the heart exceedingly weak. The respiration was at first remarkably quick, but afterwards slow, deep, and sonorous, with coldness of the breath and surface; frequent convulsive attacks supervened, attended with the passage of the urine and fœces. The femoral artery of a second dog was opened at the same time as the carotid of the first, and the blood stirred for a few minutes, so as to remove the fibrine. Six ounces of the serum and red particles were slowly injected into the external jugular vein at three syringes full. After two ounces had been transfused, there was slight quivering of the muscles (a sort of shuddering) and the circulation and respiration appeared much disturbed. A few minutes were allowed to elapse,

* Muller's Physiology, translated by Dr. Baly

when one ounce was injected ; the pulse in the leg could then be felt ; the respiration became less laborious, and the surface partly recovered its natural temperature. After six ounces had been injected, the animal sat up, and when spoken to, endeavoured to stand. At the end of an hour, there was no threatening of returning collapse. The dog was killed by injecting air into the veins.

To obviate the objection which might be raised, that the animal was not allowed to live a sufficient time to prove whether the reaction would be permanent, I repeated the experiment, keeping the dog alive for twenty-four hours, when he seemed to be only suffering from the shock of the operation.

It would therefore appear, that blood from which the fibrine is separated, answers equally as well in producing reaction, as before this constituent is removed. As the facility of performing the operation by this means is much increased, it would be probably better, in all cases, that the serum and red particles, should be alone injected.

4th A question has been raised, as to whether the blood should be introduced into the venous or arterial systems.

Dr. Blundell thought it would be perhaps better in apparent death, to inject it into the carotid in a retrograde direction, so as to fill the coronary arteries, as it has been thought upon their distension the irritability of the heart may in some measure depend.

The following experiments were made with this view.

Experiment 1st. On the 21st of January 1841, I opened the right carotid of a full grown mongrel dog. The blood flowed very freely for three minutes, then more slowly, and subsequently there was merely a slight oozing.

At forty-three minutes after the opening of the artery, respiration entirely ceased. I immediately introduced a tube into the carotid and injected water at a temperature of 102 F. in a retrograde direction. This was followed by a quivering of the muscles of the abdomen, and of those about the mouth, which soon ceased; in two or three minutes it returned, and became more general, for the space of a minute. It then entirely subsided.

Artificial respiration was now commenced. When about twelve ounces of water had been thrown in, the injection was discontinued. The artificial respiration was kept up for more than an hour, but without producing any additional signs of returning life.

Upon examining the animal a few hours after death, the right side of

the heart, was filled with coagula and water, the venæ cavæ were also distended; the left side of the heart and pulmonary artery were empty.

The fluid had evidently made the entire circuit of the vessels, as it was found in the right side of the heart, after being introduced into the carotid. It appears to have been there arrested.

Experiment II. On the 20th January 1840, a tube was introduced into the carotid of a large bull terrier; the blood as it flowed was received into a vessel, and stirred so as to remove the fibrine.

The usual symptoms of excessive Hæmorrhage were very quickly produced, and at ten minutes after the opening of the artery respiration ceased.

I slowly injected into the carotid artery in a retrograde direction, six ounces of the blood, deprived of its fibrine, which had been previously removed from the vessels, artificial respiration being at the same time performed. There was no appearance of returning life.

Experiment III. On the 12th June 1841, having introduced a tube into the right carotid of a small sized mongrel bull terrier, the animal was allowed to bleed until respiration had entirely ceased. A small quantity of a saline solution (1 oz.) consisting of the carbonate and muriate of soda, was carefully injected into the carotid artery in a retrograde direction. This was followed by the occurrence of several full and deep inspirations, together with irregular twitchings of the muscles about the mouth, which almost immediately ceased. About four ounces of blood deprived of its fibrine, were now slowly transfused into the external jugular vein, but without producing any appearance of returning life. The injection of the saline solution into the carotid was repeated. No respiratory movement followed. Artificial respiration was not performed in this experiment.

The conclusions to be drawn from these experiments are rather opposed to the view entertained by Dr. Blundell, but they are not sufficiently numerous to set the point at rest.

If it were proved, that blood introduced into the carotid, and transfused in a retrograde direction would answer any good purpose, there are cases where it might be tried, as for instance when this vessel is divided in cases of suicide or by violence. Here there would be no great difficulty, in introducing an instrument into the vessel, and injecting in this direction.

As to the advantage which this mode of proceedure, would have in cases where respiration had not ceased, over the usual practice of opening a vein, there are no facts to determine.

5th. As to the quantity of blood which should be transfused.

This of course, it is impossible to calculate. In some instances it

appears by a reference to table No. V. that a very small quantity (2oz.) was sufficient, whilst in other, ten, twelve and even twenty two ounces, were required.

In those cases where headache, intermitting pulse or restlessness occurred after a moderate quantity of blood had been injected, the operation was mostly discontinued.

In addition to the objections against the adoption of Transfusion which have already been mentioned, there are some others to which I will allude.

1st. The danger of Phlebitis, arising from the irritation to which the vein is subjected by the introduction of a tube, has always been considered a strong objection.

I have however been unable to find one fatal instance of this disease following Transfusion : occasionally symptoms of Phlebitis supervened, but they always subsided under the use of the usual remedies.

2nd. The probability of the admission of air is also brought forward, as an objection. But this danger would appear to be overrated.

Dr. Blundell injected five drs. of air into the jugular vein of a dog without causing death.

Nysten has also proved that small quantities of air are rapidly absorbed.

It is therefore clear, that a few air bubbles would not be productive of ill consequences, and if it be taken into consideration, that when the operation is properly conducted, even this small quantity will be excluded, but little stress can be placed upon this objection.

The strongest objection, and in fact the only one entitled to serious consideration, is the assertion that Transfusion has not the power of causing reaction.

The present inquiry has been chiefly directed to an investigation of this point, so far as such an object can be attained by a reference to recorded cases. How far I have succeeded, in arranging the evidence for the elucidation of the question, it is not for me to say.

I have purposely avoided alluding to the injection of saline and other solutions in cholera,(a point of considerable local interest) as the limits of this communication will not allow of its being fully discussed ; should a paper upon this subject in continuation of the present one be deemed worthy the notice of the Society, I shall be happy to furnish it upon a future occasion.

Article. XI.

Medico-Historical Abstract of the 1st year's service in the East Indies, of H. M.'s 14th Regiment of Light Dragoons, at Kirkee, under the Bombay Presidency. By J. W. Moffat, Esq., Surgeon H. M.'s 14th Light Dragoons.

Presented, December 1842.

Her Majesty's 14th Regiment of Light Dragoons hastily augmented from 334 to 501 strong, exclusive of the details left at Maidstone in Kent, for the purposes of a Depôt, recruiting, &c., embarked at Gravesend, on the Thames, in two divisions. The Head Quarters and Right Division, 337 strong, under Lieutenant Colonel John Townsend, on board the Repulse, Reid, Commander, on the 24th May; and the Left Division, 164 strong, under Major Charles Barton, on board the Reliance, Green, Commander, on the 17th June 1841; and arrived in Bombay harbour, the Right Division, reduced by the occurrence of one casualty during the voyage, on the 6th September, and the Left Division, on the 2nd October, following. The troops remained on ship-board in the harbour for three days; their landing being interdicted, and their communications and dealings with those on shore limited, till the tents, equipage, and stores, for the short march in view, and directed to take place with the least possible delay, were provided; when the Regiment disembarked in boats at Panwell, and reached its destined station, Kirkee; the Right Division on the 19th September, and the Left Division on the 13th October, 1841. Here the Regiment was augmented further by the transfer from the 4th Regiment of Light Dragoons, under orders to return to England, of 150 volunteers, disposed to extend their Indian service, who were incorporated on the 1st October.

Considerable experience warrants the propriety of securing to a European Regiment, for the first year at least of its tropical service, the advantage of a residence at Poona, or elsewhere in the country above the Ghauts, where the climate is 10° lower than on the coast, and the air pure,

buoyant, and comparatively dry; and the East India Company's Government have established an extensive depôt at the former place to which all their recruits on arrival at Bombay forthwith proceed.

From the ship the Regiment was transported in open boats across an arm of the sea and by a small river to Panwell, a large straggling village, a few miles inland, at the distance of some twenty miles, to which the tide ascends. Short as is the distance, this passage is often not effected under twenty-four hours, or two tides from the clumsiness and overladen state of the boats. It becomes then necessary that a day's rations should be furnished, good water provided, and that the boats should be protected by awnings from the midday sun and night dews. The low marshy confined position of Panwell renders it any thing but a desirable point for disembarkation, and offers few good encamping sites, especially during the wet season. The consequence has been the production of fever and bowel complaints, and too often, the prevalence of a destructive cholera among the troops who have been unfortunately detained many days there. At the time of the Regiment's landing, although there had been a favorable break in the season, yet the ground was very damp, and the occupation of the tents not a little hazardous. The want of a large shed protected to windward with a good roof and raised floor for the accommodation of the troops so frequently arriving at this thoroughfare, which would add so much to their comfort and safety, was much felt, and the occasion served for enforcing what others had previously recommended,—the economy and advantage of such a building.

In two marches, the first of twelve miles to Chowke, and the second of sixteen miles to Khandala, the top of the Ghauts was attained. Here a large building of solid masonry divided into four or five apartments, built by a wealthy Native for the convenience of travellers, was found unoccupied, and appropriated by the troops. This was a most fortunate occurrence, as the weather proved rainy and tempestuous, and a day's halt was necessary to get up the whole of the baggage, and to rest the cattle. A change of climate was immediately felt; there was no longer experienced the hot enervating oppressive atmosphere of the Concan. Four additional stages of unequal length; the first to Karlee, eight miles, a hot confined situation among the Ghauts, liable to great vicissitudes; the second to Wargaum, twelve miles, now more on the open plain; the third to Booseregaum, fifteen miles, a poor small village surrounded with a mud wall at which no supplies can be obtained with certainty, which was not the case at the other stations, where, meat, poultry, eggs, milk, vegetables, fruit, straw, firewood, &c., from tolerably well furnished bazars

could be supplied; and the fourth of five miles to Kirkee. Spirits, flour, rice, biscuit, tea, sugar, and some live bullocks were required to be brought forward by a provident commissariat. Fresh baked bread at a very little expense might be on such occasions forwarded from Bombay to Panwell, and from Poona to Khandalla and Wargaum, which would be a great boon to the troops, and a vast improvement over the present issue of stale biscuits.

With every precaution, not neglecting a free supply of straw to the tents to cover the damp ground, it was found, chills at night were experienced, and the more dangerous, from the irritable state of the bowels induced by the sudden change of water and to fresh meat and a vegatable and mixed fruit diet;—the heat of the tents in the day time was trying, and occasional exposure to the sun's rays was unavoidable. The consequence was the frequent occurrence of diarrhœas, flatulent colics, dyspepsies, and more rarely fever, common or bilious, with now and then a case of marked determination of blood to the head. Where there were much nausea and oppression at præcordia, the exhibition of an emetic was of signal benefit; but generally in the bowel complaints, although often accompanied with much pain and spasm, and even with coldness of extremities, a mild opiate of a few drops of solution of muriate of morphine with a carminative of essence of peppermint coupled by quietness in a dry warm bed, and the application of heat to extremities and abdomen, allayed the inordinate action. When the nausea, occasional griping, and variable purging continued, shewing that the cause of irritation was not removed, or that the biliary secretion was irregular, a small dose of calomel with a minute portion of Ipecacuan, and muriate of morphine followed after three or four hours with a dose of compound powder of jalap or of castor oil, was exhibited usually with relief, when quietness and abstinence were rigidly adhered to. In the cases more marked with pain and irregular distribution of temperature, and even in those where the determination of blood to the head was striking, as they seemed connected with overloaded stomach, an emetic of Ipecacuan grs. xxv. with carbonate of ammonia ℈i with the additional means of equalizing the heat of surface was always of service, often prevented the necessity of blood-letting and always reduced the violence of the symptoms.

Kirkee, the only station under the Bombay Presidency provided with permanent accommodation for a Regiment of European Cavalry, embracing an area of some four square miles, is well defined by the river Moula, which meeting an obstacle to its direct south-easterly course in a

spur or unequal line of hill from four hundred to two hundred feet in height, running in a north-easterly direction from the western Ghauts, is turned to a northerly course for three miles, till, reaching the extremity of the ridge, for the last mile elevated only thirty or forty feet, it is enabled after a short easterly run to resume its southing. On a low part of this ridge near its extremity, on which somewhat more elevated ground the village of Kirkee is situated, and its sloping sides, enclosed within the deep sweep of the river, the military cantonments are placed. They lie E.S.E. from Bombay, about two and a half miles to the north of the city of Poona, with the river Moota interposed, close on the right bank of which the city stands, and which is crossed by a fine bridge, half a mile lower, or to the N. by E. at the Sungum immediately before its junction with the Moula.

The most direct and new post road from Bombay to Poona, which intersects the Kirkee cantonment, turns off in an easterly direction from the road by Panoula, about five miles after passing Wargaum, and a most durable bridge has been lately finished over the Moula, on the N. by W. to connect the road. On the east again, another bridge, the old Kirkee, is thrown across the Moula to connect the Seroor and Ahmednuggur road. By the new road, and an excellent one it is, Kirkee cannot exceed sixty-two miles from Panwell, and communication with Bombay is easily effected within eighteen hours.

The station is celebrated as the spot chosen by Mr. Elphinstone in 1817, then Resident at the Peishwa's Court, to make a stand with his Subsidiary force scarcely numbering three thousand Sepoys, or three Battalions under Colonel Burr, against the suspected treachery of the Peishwa, and where he repulsed a sudden attack made by the Mahrattas in force exceeding twenty thousand.

About two and a half miles directly S.E. with two rivers interposed, the the Moula and the Moota Moula, or four and half miles by the high road cross the Sungum bridge, the Poona cantonments are placed. The ridge on which the cantonment is built, although not exceeding forty feet above the bed of the river, commands the view of an extensive bare plain almost destitute of trees to the north, and relieved only by a few detached rather remarkable high conical hills, the Cid hills, at two or three miles distance across the river to the N. E. which run diagonally with the Kirkee ridge, or east. A ridge of a few hundred feet in elevation, and running more easterly, having the temple of Parvati on its extremity which overhangs Poona, breaks the view at three miles distance to the S. W. beyond which further south, and running E.N.E. is a very lofty range of

mountains, among which are the forts of Singhur, Poorundhur, &c., rising upwards of two thousand feet. The western Ghauts are at the distance of thirty miles. The plain slopes downwards to the east very gradually, and is estimated at Kirkee, sixty miles inland, at about one thousand eight hundred and twenty feet above the sea, and between four hundred and five hundred feet below the parallel chain of Ghauts.

The surrounding hills are of the trap formation. The ridge on which the Kirkee cantonment is built, consists chiefly of a bluish grey broken-down basalt. In one or two places where more massive, the rock is quarried for its hard dark bluish stone. This rock is scattered about naked, but generally has a thin sterile clayey and gravelly soil of a reddish colour overlaying it, bearing with difficulty in the rainy weather some coarse stunted grass. The slopes, however, are in many places furnished with a heavy loamy soil, which, with the addition of some light manure, the ashes of burnt branches, leaves, and weeds, bear fair crops of the esculent grains in common use; Jowaree, Holcus Sorghum; Bajree, Holcus Spicatus; Ragie, Cynosurus Coracanus, in the monsoon, and certain pulses in the cold season following, which derive their nourishment from the heavy dews. In a few places the heavy black cotton soil of variable depth is found, which yields with little culture rich annual crops. A few fruit and other trees of natural growth are met with in the course or neighbourhood of the river, as the Mango, Mangifera Indica; Tamarind, Tamarindicus Indica; Neem, Melia Arzadarachta; Babool, Mimosa Arabica, &c., but many are cultivated, and with care attain great perfection.

The station is almost entirely dependent on the river, and the monsoon rains for water. Six or seven wells have been dug through the solid rock in different parts of the cantonment, and the springs have been reached about the depth of twenty-six or thirty feet. They afford a scanty supply, even with the surcharge of water received from the monsoon rains and occasional showers, and generally before the hot dry season has passed they are nearly exhausted. The water, however, is of a pure hard quality after depositing a moderate earthy sediment. It would require a depth of seventy feet to be reached to secure any steady supply. But the river prevents an absolute want of water, being in some places under a mile's, no where, above two miles's distance. It is here between twenty and thirty yards in width, and two feet in depth, running sluggishly over a gravelly or rocky, but in many places, a rich muddy bottom. During the monsoon rains it rises from twelve to twenty feet, and forms a strong rapid heavy current of muddy water. Fish, trout, murrell, eels, are often caught

in it, and they have been found wholesome. Delicious water-melons grow along its sides.

The cantonment is much exposed. The winds and seasons are here the same as throughout the Deccan. The hot parching northerly winds of April and May are felt very severely, and the glare and heat then from the light bare soil are most intense. Luckily it is not entirely beyond the influence of the alternate sea breeze in the afternoon, which, although frequently slight, and then lessened or interrupted by the higher land to the west, is generally sufficient to give it fresh cool evenings. It has a bleak, dreary aspect during the prevalence of the S. W. monsoon, from the violence of which, however, it is most protected.

Besides the small village of Kirkee on the higher extremity of the ridge to the N. E. and from which the station derives its name, there is another small village Bapooree, about $\frac{3}{4}$ of a mile to the N.W. ; and, since the permanent settlement of a regiment, there has arisen a large native establishment of horsekeepers, campfollowers, and shopkeepers, where a bazar is established for many necessary wants, but which is not so much resorted to from the proximity of the city of Poona, and a better supplied military bazar adjoining. On the further side of the river northward, all within two miles distance, are three or four other villages, viz. Dapooree to the N.W. in the immediate vicinity of which there is a residence for the Governor when he chooses to visit the Deccan. A botanical garden was laid here in 1828 on the banks of the river, but it does not receive much attention, apparently. Bopgaum or Bopgale to the N., Kullus to the N. E. and again to the south, but without crossing the river at the base, as it were of the station, we have Waree.

The inhabitants of these villages are few in number, inoffensive, very poor, of the Deccany caste of Hindoos, and are chiefly occupied in the cultivation and watching of the neighbouring grounds, in tending cattle, and other labouring work. Their houses are imperfect, low thatched, mud hovels, huddled together, and surrounded with all sorts of filth. The whole neighbouring population, exclusive of the campfollowers and regimental bazar, may not exceed eight hundred souls.

The district does not bear a good reputation for health ; the water is not esteemed, the climate is considered cold, the bazar not well supplied. The average term of life amongst them is estimated at thirty-five years, but there are at present several people living between seventy and eighty years of age. There seems no particular endemial disease, but remittent fever and agues are very prevalent, and easily excited by exposureto an

easterly wind, or after any excesses or fatigue. The prevalent sickness arises from want of proper nourishment and protection from a variable climate ; hence glandular disease is obstinate and common, rheumatism prevails, and many cases of idiotcy may here be met with ; and epidemic disease, when it appears, makes dreadful ravages ; visitations of cholera or of small pox only ceasing with the failure of victims.

The *Barracks*, &c., were erected in 1826 and 1827, and taken possession of in June 1827. They are built in six parallel lines of pendals, or barrack rooms, from E.N.E. to W.S.W. with the front to N.N.W. The front line is appropriated for the eight troop's Serjeant Major's quarters. The four centre lines contain four long barrack rooms or pendals in each, and in the rear line are placed the Quarter Master's stores, the school room, the Serjeant Major's Quarters, the Canteen, two cooking houses, and the regimental artificers' shops. They are constructed of half burnt brick with chunam, thatched over with straw and leaves and having a flooring of well cemented gravelly clay. They have an airy appearance, and are found to be dry. Each line of building is separated by a street 190 feet broad, and the rooms in the same line are distant from each other 116 feet. The rooms in the different lines are not placed directly in the rear of each other, but chequer-ways. The barrack rooms consist of a single story, the floors of which are raised about two feet above the ground, have a tiled verandah on the rear and left or western gable seven feet in breadth, with a portion at the angle built up for keeping water and for the purposes of personal ablution. Each room is $109\frac{1}{2}$ feet long, 11 feet of which at the eastern end is partitioned off and subdivided for two non-commissioned officers ; $23\frac{1}{2}$ feet broad, and 20 feet high to the centre ridge of the roof or $11\frac{1}{2}$ feet by the side wall, with 4 doors and 20 windows placed opposite to each other. The windows are raised $2\frac{1}{2}$ feet above the floor, and are 5 feet by 3 feet in size, filled with teakwood boards which are divided into three unequal parts, the upper part of which opens upwards and outwards, and the two lower inwards. Three chimney like venetianed ventilators are placed on the ridge of the roof.

The barracks are calculated to accommodate a regiment 700 strong, each room being capable of containing with ease and comfort 38 men and 2 non-commissioned Officers, each of whom has thus a space of upwards of 1400 cubic inches.

There are two privies, one on each flank, large and commodious, placed at the distance of 150 feet, and, from the excrement being received in baskets and removed every morning, any unpleasant smell rarely extends far, and is generally prevented. Reservoirs for the urine have been dug at a lit-

tle distance from the S.W. angle of each barrack room which has a walled shelter attached with a pipe. These reservoirs are covered, and of such a size as to obviate the necessity of emptying them for six months, although opened and cleared out every other day.

About 100 yards distance on each flank a street of stone, mud, and thatched huts is built to the number of 20 or thereabouts, with a distinct privy, for the accommodation of the married soldiers, none of whom, excepting serjeants occupying the partitioned ends of the pendals, are mixed with the single men in barracks.

There is a considerable extent of clear space around the barracks, in front to the extent of 100 yards used as a private parade ground for forming and inspecting the troops, and in the midst of which is the main guard-room, and beyond which the horses are picketed. In the rear there is a wider space of about 150 yards between them and the line of Officers' Bungalows, which is used as a foot drill ground, and in which the rear guard-room is situated. On the southern slope of the ridge extending to the river are the large and sterile lawns or compounds of the Officers, and the extensive open plain on both sides affords ample ground for field exercises and riding instructions. About 100 yards to the right of the barracks, situated at the extremity of the open space in front, in an airy dry situation, are twelve square buildings of brick and tiles, in three lines, each 10 feet square, which are the cells for the solitary confinement of prisoners. They have a door and are ventilated by oblique barred openings in the upper and lower parts of the walls.

At the distance of from 300 to 700 yards to the left or westward of the barracks, a little in advance of their front line upon a more elevated spot and with an open approach, the *Hospital* stands. This building is of later erection than the barracks. It was finished in 1830, and first occupied in June of that year. It is a large irregular oblong structure, built of burnt brick cemented with chunam, and tiled, with a flooring of flagstones raised between two and three feet above the surrounding ground. It has a N. N.W. aspect, and is dry and airy. The wards form three sides of a square open to the N. N.W. enclosing an area of $91\frac{1}{2}$ feet by $121\frac{3}{4}$ feet. Each side forms one large ward except that on the south, which is divided into two, by a passage leading into the surgery. The two side wards are each 90 feet long, 24 feet broad, and $22\frac{2}{3}$ feet high in the centre, or 16 feet high by the side wall, with two doors, 8 feet by $4\frac{1}{2}$ feet, and fourteen windows $6\frac{1}{2}$ feet by $3\frac{1}{2}$ feet, placed $3\frac{1}{2}$ feet above the floor, and three chimney-like ventilators on the ridge of the roof.

The doors are of teakwood, and the windows of glass painted green which open inwards. Such a spacious ward, with nothing to obstruct the circulation of air, and furnished simply with light iron bedsteads and plain teapoys, contains conveniently thirty-eight patients. The southward side is divided into two wards of smaller dimensions of 56 feet long each, but corresponding in width and height, with two doors and eight windows, one of which in the south wall is very large, $6\frac{1}{2}$ feet by 7 feet, and each capable of containing twenty-three patients. For this climate the sick in hospital might be considered crowded in the numbers calculated above, or one hundred and twenty-two in all which gives 1100 cubic inches of space to each; but the accommodation if confined to ninety is most commodious.

These wards have a verandah in front 9 feet in breadth, defended at its outer edge by a wall 2, 5-6th feet in height, from which issue several wooden posts for the roof. The verandah of the side wards is extended backwards to an after area formed by the various office-houses of the hospital, affording a walk of upwards of sixty yards.

This after area is $121\frac{3}{4}$ feet by 42 feet, and has on its north side the surgery 8 feet by 20 feet, and two other rooms for the medical stores and an office; besides at each extemity opening from the side verandah a small ward with one door and window for the accommodation of any particular cases requiring solitude or separation; opposite are the steward's store-room and the apprentices room, and the cooking house; and jutting out from the corners of this line and at the termination of the side verandahs the privies are placed, each 20 feet by 10. Contiguous to the stewards store-room but opening from the outside without the gate of the after area, is a room for the reception and examination of dead bodies, 20 feet by 10 feet, and at the distance of 210 feet. Quite detached, is a small building used as a female hospital, containing a room 30 feet long, 18 feet broad, and 14 feet high, with two doors and four windows, capable of accommodating 10 women; and two verandah rooms in the south, 12 feet by 8 feet for the nurse and midwifery cases, with small adjacent but detached cookhouse and privy.

Two bungalows have been built, one at each side east and west of the hospital at the distance of nearly 100 yards, for the accommodation of the apothecary and steward; and at the distance of nine feet in front of the side wards are the detached houses or rooms for the hospital serjeant and the hospital guard. A considerable space of ground around the hospital is enclosed by a prickly pear hedge for greater seclusion and protection, and which is kept clean and free of all rank or decaying vegetation.

To the excellent accommodation just described, little fault can be found, and there is small room for improvement. The ventilators have not answered, being so much exposed and open, that, during the wet monsoon, they exclude neither the rain nor the raw damp air, although dammered at top, and the side venetians protected with bamboo matting. Narrow oblique openings in the upper part of the side walls, which would be protected by the overlapping roof, would answer far better the object of promoting the escape of the heated air and permitting a free circulation. Were the verandah to surround the pendal, instead of being confined to two sides, great additional comfort and coolness would be gained.

Public water carriers are employed to bring fresh daily supplies of clean water for drinking and the purposes of washing. One side of the washing room has two tiers of shelves of solid masonry for supporting the globular earthen vessels which contain the water, and in the other side is placed an open mouthed barrel with a tub or two for water for general purposes. A trough, provided with a stop cock to allow the easy escape of the dirty water, and capacious enough to permit three or four men to wash their hands, &c. at the same time, is fitted up at a convenient height. There are no recesses to harbour filth in the barrack rooms, every man's appointments and necessaries are placed on pegs or thin wooden shelves fixed at a sufficient height by the side of his bed, which is provided by the public, and consists of boards and trussels raised about two feet above the floor, and under which his box, agreeably to regulation, can be thrust and kept. Tables and forms are provided also for the convenience of messing, and a scale of diet is laid down, and furnished by Government at a reduced rate to the soldier. The daily ration drawn for each man, not in hospital nor in imprisonment, is bread 1 lb. 2nd sort, beef 1 lb.; rice 4 ozs.; salt 2 ozs.; coffee or tea 5-7th ozs.; sugar $1\frac{1}{2}$ oz.; firewood 3 lbs. with one dram of arrack at the option of the soldier, to be consumed at three regular meals, breakfast, dinner, and supper.

The men are messed in squads of four, and native cooks are entertained, at a small weekly cost, who are further engaged to provide milk for the tea or coffee, butter, eggs, steaks, chops, additional vegetables, cheese, &c. as they may be occasionally asked for by varying tastes and appetites. The station being in such proximity to a populous city, all sorts of supplies are procurable in abundance, and little could be altered in the ration for the advantage of the men beyond the occasional variety of mutton. The supply of vegetables probably is wisely left to the choice of the messes, and for the rice, which is not much relished, over and above what is used for the soup, unless when curried meat is the order of the day, the cooks

are not averse to substitute carrots, onions, country greens, and occasionally pumpkins, yams, &c. A dram of spirits still continues to be offered to the men at dinner time, and an inducement to take it is held out in its issue at a lower rate by one-fourth than its ordinary retail price. The issue of a ration dram is a relic of former times, when salt meat and stale provisions were the ordinary and only rations provided, but surely, it may be well dispensed with when mixed fresh provisions of an excellent and wholsome quality are supplied, and its continuance leads to a wrong impression of its utility and necessity. If a boon is to be conceded in the shape of liquor to be added to the solid ration, let it be in something of a less pernicious quality and tendency, and I have no doubt, were Government to take the trouble of providing good beer for the troops, it would be more than repaid in the improved morale and health of the army, and would indemnify itself for the immediate pecunairy outlay very soon, by being enabled, from the large consumption, to issue it at a profitable price, still within the means of the soldier, and even sufficiently low to lead to its being sought after. On board of ship, porter has been already substituted for rum with most excellent effect.

After this brief description of the station with its accommodations, and supplies, it will be necessary next, before entering upon the diseases which have prevailed, to give an exposition of the constitution and state of the Regiment on its arrival at it. The period chosen for its arrival in India was the latter portion of the moosoon, and but for a favorable season, might have proved unfortunate. The rains ought to have ceased before the arrival of troops. Exposure to the intense damp of the tropical rainy season, before the primary arrangements for establishing troops with the necessary comforts are completed, gives a severe shock to the constitution, even when no particular disease is immediately excited, and from my experience, I am satisfied of the advantage of embarking troops, from England for Western India in the weeks following the first of July. The Regiment, five hundred strong, arrived at Kirkee in a healthy efficient state. From the excellent regulations and arrangements now enforced by the Company for the transport of their troops, the men maintained their health and spirits throughout the voyage of four months, and disembarked in good condition. One casualty only having occurred, in a man formerly a buffoon at Astley's amphitheatre, who, having sold his boots to a sailor for liquor, lay down on deck under its influence, and was finally detected with his feet wet and shaded, and his head exposed to the direct meridian rays of the sun. He was awoke to be informed that he was a prisoner, and soon afterwards he reported himself sick. He laboured under intense

fever with irregular distribution of heat ; delirium soon supervened, and he died comatose within five days.

Of the twenty cases reported unfit for duty and sick on reaching Kirkee, scarcely one was confined to bed. External disease, or superficial inflammation, ulcers, accidents, &c. chiefly filled the list ; seven cases only of internal ailments being under treatment.

After being augmented by the addition of one hundred and fifty volunteers, the state of the Regiment, as to age and Indian service, is shown as follows :

Strength 650.

Ages.	Number
Under 18 years	5
From 18 to 20 do	161
do. 20 to 22 do	130
do. 22 to 25 do	116
do. 25 to 30 do	70
do. 30 to 35 do	119
do. 35 to 40 do	48
do. 40 to 50 do	1
Total .	650

Indian Service.	Number
Under 1 Year	493
do. 2 do	13
do. 5 do	22
do. 7 do	11
do. 10 do	15
do. 15 do	67
do 20 do	24
Total .	650

I shall now proceed to shew the deaths from all causes that have taken place in the Regiment from 1st September 1841, to 30th September 1842.

	Serjeants.	Corporals.	Privates.	Total.
Strength	46	32	572	650
Deaths	3	7	26*	36

In these deaths is included, one, a corporal found dead, cause unknown.

Ages and period of Indian service at which these deaths, exclusive of the one found dead, occurred.

Ages.	Number
From 20 to 22 years	13
do. 22 to 25 do	10
do. 25 to 30 do	3
do. 30 to 35 do	4
do. 35 to 40 do	5
Total .	35

Indian Service.	Number
Under 1 year	27
do. 2 do	1
do. 5 do	1
do. 7 do	1
do. 15 do	3
do 22 do	2
Total .	35

* 8 are volunteers.

The diseases by which these deaths, and the whole admissions into Hospital in the course of the year, have been occasioned, are stated in the following return.

Classes of Disease.	Specific Diseases.	Non Commissioned Officers and Privates.			
		By each Diseases.		By each class of Diseases.	
		Admitted.	Died.	Admitted.	Died.
Fevers	Febris Quotidiana Inter	6	..	379	5
	do. Tertiana Intermittens	5	..		
	do. Remittens	61	..		
	do. Continua Communis	307	5		
Diseases of the Lungs.	Pneumonia	1	..	27	..
	Hæmoptysis	1	..		
	Catarrhus Acutus	20	..		
	do. Chronicus	5	..		
Diseases of the Liver.	Hepatitis Acuta	8	2	12	2
	do. Chronica	1	..		
	Icterus	3	..		
Diseases of the Stomach and Bowels.	Dysenteria Acuta	62	2	289	4
	do. Chronica	1	..		
	Dyspepsia	23	..		
	Diarrhœa	155	1		
	Obstipatio	7	..		
	Cholera Morbus	1	1		
	Colica	40	..		
Cholera	Epidemica	55	22	55	22
Diseases of the Brain.	Apoplexia	2	..	12	2
	Paralysis	4	1		
	Delirium Tremens	4	1		
	Epilepsia	2	..		
Rheumatic Affections.	Rheumatismus Acutus	22	..	25	..
	do. Chronicus	1	..		
	Odontalgia	2	..		
Venereal Affections.	Syphilis Primitiva	56	..	184	..
	Ulcus Penis, N. S.	15	..		
	Bubo Simplex	23	..		
	Gonorrhœa	60	..		
	Strictura Urethræ	1	..		
	Hernia Humoralis	22	..		
	Cachexia Syphiloidea	2	..		
	Phymosis	3	..		
	Verruca	2	..		
Ulcers and Abscesses.	Phlegmon et Abscessus	111	..	197	..
	Paronychia	1	..		
	Ulcus	85	..		
Wounds and Injuries.	Luxatio	1	..	83	..
	Subluxatio	20	..		
	Vulnus Incisum	21	..		
	do. Sclopitorum	1	..		
	Contusio	37	..		
	Ambustio	1	..		
	Fractura	2	..		
Punished	Punitus	2	..	2	..
Diseases of the Eyes.	Ophthalmia Simplex Membranorum	18	..	18	..
Diseases of the Skin.	Papulæ	21	..	48	..
	Squamæ	4	..		
	Exanthemata	5	..		
	Bullæ	1	..		
	Pustulæ	9	..		
	Vesiculæ	8	..		
Other Diseases.	Cynanche Tonsillaris	13	..	38	..
	Splenitis	3	..		
	Otitis	1	..		
	Hæmorrhois	5	..		
	Vermes	2	..		
	Dysuria	1	..		
	Varix	1	..		
	Tumores	4	..		
	Necrosis		..		
	Dracunculus	17	..		
	Total	1369	35	1369	35

The large proportion of casualties among the Non-commissioned Officers, amounting to one-fourth of the whole, or one in nine and a half, compared with that of the privates, one in twenty-two, requires some notice. It may be partly accounted for in the greater exposure to which they are subjected, especially at first, before the arrangements for Native Orderlies can be completed. The necessity of employing Native Orderlies ought to be fully impressed on Commanding Officers of troops, without loss of time, and their attention ought to be especially called to the disproportionate deleterious influence of the vertical rays of the sun in a tropical climate, to those of a more oblique direction in higher latitudes, where the heat may be felt temporarily almost equally intense. A recklessness on their own part often leads them to slight the cautions advanced on unnecessary exposure, and it requires the most stringent regulations, and the greatest circumspection on the part of their Officers, to render them more careful. Two Corporals and one Private fell victims under fever from this cause. The fever being complicated with subacute phrenitis; low delirium quickly appearing, and coma supervening. Death took place in all within five days. What increases the ill effects of fatigue and exposure in this class is, that they have increased means of purchasing refreshment, and, when jaded and heated, they thoughtlessly seek to relieve their sense of sinking and oppression by a recourse to drinking. Spirits only are conveniently within reach, and their price is best suited to their means, which is another strong reason for repeating the recommendation of Government's exerting itself to provide a less hurtful beverage. In several of the cases of fever, symptoms of delirium tremens were very marked, and, although they did not terminate fatally, these cases underwent dreadful shocks, and they were long ineffective. One case of fever, or rather of gastro-enteritis in a young man, reduced from Corporal in consequence of his yielding to drinking, was purely the result of excess in spirituous potations. The fatal and two other cases of delirium tremens occurred in Non-commissioned Officers. A long residence in India gives no immunity from the noxious effects of exposure to the sun, but disease then is of a more insidious character. The fatal, and one other case of paralysis, were owing to the conjoined effects of exposure and drinking, in men, volunteers, of quiet regular habits, yet seldom a night without being muddled, and thoughtless of midday exposure.

The regiment continued healthy till the latter end of October, when fever began to prevail epidemically, and soon obtained a great height. It subsided within the first fortnight of December. The numbers primarily attacked were one hundred and ninety-seven. The weather then was

considered unseasonable. A powerful clear sun, with sudden thunder storms, atmosphere variable, and great diurnal vicissitudes; some days, a fine breeze, cool and bracing, occasionally even raw; others, still and sultry; some nights, chilly and damp; others, close with a warm air. Luckily no case proved fatal. Its type was continued, or the remissions were at first very imperfect. It became in its course decidedly remittent, but rarely intermittent; relapses were regular intermittents, shewing how complete are the relations of the several types of fever, and that a vertical sun and atmospherical vicissitudes on a barren waste, just as effectually produce them, as marsh and jungle malaria, only in less intensity. Moreover, I have repeatedly witnessed, remittent and intermittent fever present in men under treatment for external disease, as syphilis, gonorrhœa, simple bubo, giving the suspicion of simple loss of nervous tone being sufficient to induce periodic febrile action. The duration of the disease under consideration was from three to five, seldom protracted to seven, days. The symptoms were those of simple excitement with great nervous depression, attacking rather suddenly with chills and heats, faintness or sense of prostration, headache, vertigo, frequent soft pulse, nausea, white tongue. Emetics at the commencement often followed with an opiate of morphine combined with potassio-tartrate of antimony to secure a diaphoretic effect at night, an alterative dose or two of calomel, attention to the bowels without drastic purgation, saline diaphoretics, spoon diet, and quinine on the earliest appearance of a remission, with a gradual increase of a light diet, were the measures successfully pursued, and they seemed to afford relief. Bleeding was rarely resorted to. In some cases, leeches were applied to the temples or to the pit of the stomach, and blistering the nape of the neck was occasionally thought necessary. The beneficial influence of the quinine, when exhibited on the slightest remission, was most marked. The fatal cases, as already noticed, that occurred, were sporadic, and attributable to direct exposure to the sun and excesses in drinking or other irregularities, and were of a more decided inflammatory character than the epidemic just described. One, a Serjeant sunk, after being convalescent from fever and apparently doing well, from great nervous depression during the prevalence of cholera. In few of the more urgent cases was general bleeding resorted to, although the best effects and speedy relief resulted from local bleeding and blistering, with the free use of calomel, antimony and morphine, in small repeated doses.

The health of the men was soon re-established after the subsidence of this acclimating fever, and the efficiency of the Regiment continued good

till the month of May 1842, when it experienced, a dreadful shock from an invasion of cholera. It this month fifty-three cases of cholera presented, of which twenty proved fatal. Two sporadic cases of great intensity occurred and terminated fatally, one in the preceding, and another in the following month. One case only has not been included under the head as *epidemic cholera*, being apparently the collapse succeeding a debauch on Christmas in a man of usually quiet temperate habits. He neglected to report himself on the supervention of a severe diarrhœa, was overlooked for a day, and finally brought to hospital against his will by a comrade in a dying state. No Commissioned Officer was attacked, but the disease proved fatal to four Non-commissioned Officers. Soldiers of all ages and periods of service were attacked, residence in India gave no immunity; but while many hard drinkers enjoyed excellent health, the large proportion of fine young soldiers of regular temperate habits attacked was remarkable. Neither were women nor children exempt, and several cases among them proved fatal. It raged among the surrounding villagers and natives as a pestilence. The remote causes were obscure; some very cold nights, followed by sultry cloudy days, and rather variable weather, were remembered to have preceded, and did accompany the disease. Severe colics and diarrhœas attributed to an abundant fruit season of melons, mangoes, &c., had become rife. There seemed withal, however, reason to suspect its dissemination from intercourse with a diseased nucleus. The regiment was remarkably healthy; a fatal sporadic case with all the symptoms of epidemic cholera had certainly occurred, but was almost forgotten, when a party of seventy-five mounted men were ordered to occupy the Horse Artillery barracks at Poona, in consequence of the destruction by fire of two large barrack rooms and many of the detached huts at Kirkee. Cholera had been prevailing very lately in the Poona military cantonments, and appeared soon after the arrival of the 1st Bombay European Regiment, which had suffered on its march from Bombay. The party had not remained a fortnight at Poona, when two cases of cholera presented; two others soon followed, in the mean while the two first died, the others became rapidly moribund; more cases occurred in the night, two of which eventually died. On the next day the party returned to Kirkee. But the disease clung to it. About twenty-three cases occured in the detachment within the week after its return, of which seven proved fatal; one, a relapse, that had been seized at Poona, but sent to Kirkee, on the appearance of a favorable re-action. The remainder took place among the general body, which had not quitted Kirkee, of which eight terminated fatally. The disease prevailed extensively

and in virulence for one week only, within which period sixteen of the fatal cases took place. It ceased for a day or two, when a few more cases were seized, and then suddenly disappeared. The average duration of the fatal cases under treatment was eleven hours. Two died in four hours.

Of the Fatal Cases.

The Ages were,

2 at 20 Years.	2 at 24 Years.	1 at 34 Years.
4 at 21 do.	1 at 26 do.	1 at 36 do.
3 at 22 do.	1 at 28 do.	1 at 38 do.
4 at 23 do.	1 at 32 do.	1 at 40 do.

The Indian Service was,

15 under 1 Year.	1 under 3 Years.	2 under 15 Years.
1 do. 2 do.	1 do. 7 do.	2 do. 20 do.

Violent action of the primæ viæ was an early, if not the earliest, symptom, but many were simultaneously seized with vertigo, and sense of faintness, and a vomiting, and seemed the consequence of impaired cerebral action. Nausea and griping, vertigo and faintness, purging and vomiting, with rapid sinking of features, indescribable feelings of illness, haggard pale expression, oppression at præcordia, thirst, cold extremities, doughy feeling of skin, clammy perspirations, husky voice, and thready pulse, were the symptoms described and met with in the early stage. If not relieved, spasms of the legs and feet, of the hands and arms, pain of left side of chest, or in back, sense of heat and intolerable anxiety in chest, came on in paroxysms, under which the powers of life failed, the pulse was no longer perceptible at the extremities, which were shrivelled; the eyes were sunk and bloodshot, the countenance and patches of the skin livid, there was low tumultuary action of the heart, and great thirst and jactitation prevailed; want of sympathy or apathy of the future was very evident, but the intellect continued clear with occasionally short bursts of delirium or rather of agony; death often taking place suddenly, but occasionally with protracted coma. The evacuations from the stomach and bowels were at first frequent, copious and of a dirty serous nature, but, as the spasms advanced, they became infrequent; the urine was scanty throughout. From the hurried and frequent calls on our time, careful, and minute autopsies were out of the question; but the fine vermilion blush of the peritoneum, the varicose enlargement of the vessels of the stomach, the turgidity of the large veins and right side of the heart with an adhesive pitchy looking blood, the congested condition of the ves-

sels of the brain, and a finely injected state of the vessels of the spinal marrow, were in all examined, the most uniform anatomical appearances.

The cases that were seen and subjected to treatment in the first stage generally did well. Those in which spasms had commenced were more doubtful, and deaths and recoveries were nearly equal. When the spasms had passed, or greatly subsided, fatal collapse was witnessed. The duration of these stages was variable; the first, in some cases, lasting from twelve hours to even three days, in others, being succeeded by the spasms in an hour. The term of the spasms was short, and the period of collapse varied from three to nine hours.

When seen in the early stage, and there were much nausea and oppression at præcordia complained of, emetics of ipecacuan, and carbonate of ammonia were usually prescribed, and with good effects, followed by a large dose of calomel, and a draught of tincture of muriate of morphine ʒss. and of aromatic spirits of ammonia ʒi, with essence of peppermint m. xv. Leeches or sinapisms to the pit of the stomach or the nape of the neck were often resorted to, and bottles of hot water, bags of hot salt, or hot bricks, were applied to the extremities and for the purpose of general warmth. Weak warm brandy and water, or sago and wine, or soup, was allowed as a drink or light nourishment. If the pain, purging, vomiting, and sense of faintness abated, and the heat seemed more equally diffused with a thin warm perspiration, little else was done beyond the administration of a purgative of pulvis jalapæ. comp. or a turpentine enema; the attention being chiefly directed to quietness, keeping up the heat of the surface, and mild nourishment. When the vomiting was more urgent, saline effervescing draughts containing an excess of soda and a few drops of tincture of muriate of morphine with small doses of calomel and morphine, repeated at intervals of $\frac{1}{4}$, $\frac{1}{2}$, 1 or 2 hours, seemed to have good effect. In some slighter cases a timely draught of tincture of muriate of morphine m. xxv. aromatic spirit of ammonia ʒi, brandy ʒii in peppermint water, and attention to keeping up the general warmth often arrested the morbid train. Where spasms of the extremities had commenced, characterized more by their agony than the violence of the muscular action, powerful frictions with stimulant liniments, or the application of hot sinapisms or scalding turpentine, gave temporary relief, but the efficacy of the internal remedies was doubtful. Hot brandy and water often increased the sense of internal heat, thirst, and anxiety. Saline effervescing draughts as above, or cold water, gave more decided relief, yet here even, calomel and morphine had often a marked good effect, and the stimulant draught as above

repeated agreeably to circumstances, seemed to excite the circulation. Draughts of common salt with or without carbonate of soda, in the proportion of ʒii of the former, and ℈i of the latter, in ʒiv of water, were exhibited, and although at first exciting vomiting, were quickly tolerated, and had a marked effect in raising the pulse. In one or two cases the warm bath was resorted to, but with injurious effect in reducing the heat and increasing the exhaustion. Stimulating turpentine enemata seemed generally to produce beneficial re-action. In reviewing the practice I have to regret, that bleeding was not more resorted to. It would have afforded, I have no doubt, such relief to the oppressed thoracic viscera that the other means would have had more effect.

It is difficult to say, what general measures are suitable to be adopted during the threatened attack and prevalence of a complaint, the causes of which are in such obscurity. At the risk even of exciting alarm I should insist on all intercourse with the quarter in which and the body among whom the disease appeared being interdicted, for although contagion is not suspected, a distemperament of the air giving the predisposition seems in my opinion produced, and is not quickly corrected, but all unnecessary alarm must be avoided, a manly confidence being a great protection. Severe diarrhœas prevailing among us at the appearance of the disease and accompanying it, which might have been influenced by the plentiful consumption of mangoes, melons, &c., it was thought prudent to have a strict watch over the quality of the fruit allowed to be exposed for sale. A light warm drink of coffee, or conjee, prepared by the cooks in time to be served to the troops before turning out in the morning, and the reduction of night duty as much as possible with a generous diet, are proper measures. It may seem incredible, but the men at such a time require to be urged to apply for medical relief on their earliest feelings of indisposition, and especially on the first appearance of any relaxation of the bowels. They are averse to give in or to think themselves affected with the prevailing illness, and prefer taking themselves to the canteen, and trying the effects of spiced spirits, the powerful stimulus of which on the deranged action of the stomach too often increases the malignity of the symptoms.

The Regiment passed its first monsoon very happily; a number of cases, but of ordinary disease certainly presented, but generally in no great intensity; still towards the latter part, when, either from the increased weakness of the system, or the sudden return of hot weather, disease became less tractable. Bowel complaints have presented throughout, easily accounted for in the exposure to a vertical sun, night air, great diurnal

range of temperature, and variable states of atmosphere, throwing the organs into states of alternate high excitement and torpor, with irregularities of diet and carelessness in avoiding chills, after being heated. Morphine with some carminative to allay inordinate action, calomel to correct, and ordinary means to remove depraved secretion, the resources for equalizing the circulation, and the deprivation of all noxious stimulants, soon restored healthy action. One great desideratum during the prevalence of the rainy weather that I may mention, was the want of stoves especially in the guardrooms, for enabling the men to dry their wet clothes, and to warm themselves, after their tour of exposure on sentry. I have no doubt they would materially conduce to their comfort, and would lead to a more speedy rally from the shock the system must have undergone, and, what is more essential, would ward off many attacks of illness; for nothing, in any country, but especially in India, wears out and weakens the constitution more than the repeated disturbance of the night's rest, and the prolonged exposure to the night air. From what has been stated it will be inferred that, with the exception of the attack of cholera, disease has presented during the last year in an unusually mild degree. But, mild as first attacks in healthy sound constitutions have been, they are treacherous and insidious. In the instance of fever, convalescence requires to be carefully watched, the primæ viæ do not recover their tone for a long time, and the least excess of diet, too early exposure to night duty, or any slight irregularity at the principal phases of the moon, surely entails a relapse. This relapse may assume a remittent or quotidian type, very frequently a tertian with daily paroxysms of varying intensity and duration on alternate days, but seems under the control of quinine. It is nevertheless dangerous, as a few relapses undermine the constitution by aggravating any lurking mischief in the bowels, and unless the utmost vigilance is exercised, on the first debauch, dysenteric symptoms follow running rapidly to ulceration. From what I have witnessed, I am disposed to conclude that bringing the system under the slight but full influence of mercury, powerfully changed the disposition to febrile relapses. In those dysenteric cases alluded to, general blood-letting has been resorted to, sometimes with great advantage, but usually free topical bleeding is of more marked benefit, with hot fomentations, laxatives to remove noxious secretions, and opiate enemata to relieve irritation, with rigid abstinence. Mercury however I have found to be the safeguard, and in first attacks, I continue its exhibition in three or five grain doses combined with two or four grains of ipecacuan. and $\frac{1}{4}$ or $\frac{1}{2}$ grain of muriate of morphine, every six hours, till the system come under its influence, or

the evacuations become healthy and regular. In subsequent attacks, or in more subacute cases, I have found benefit in large doses of ipecacuan. six grains with muriate of morphine $\frac{1}{2}$ grain, and extract of gentian four grains, and the occasional addition of five grains of blue pill night and morning, with an intermediate laxative, persevered with till the irritability of the bowels has been allayed, and the evacuations have shewn healthy fœces. The two fatal cases of dysentery occurred in individuals whose constitutions had been undermined by previous attacks of fever, and who had yielded to excesses soon after leaving the quiet and regularity of hospital.

In connection with the subject of fever, I may here allude to the marked predisposition shewn to the symptoms of delirium tremens. Although I am inclined to attribute this effect in a great degree to the quality of the spirit prepared, which can rarely be obtained free from adulteration with noxious narcotics to increase its intoxicating power, there can be no doubt this is chiefly owing to the influence of a vertical sun in exhausting the nervous energy. After a debauch in a man of dissipated drunken habits, it requires great circumspection to prevent an attack, in the depression left from the previous excitement, by a modified stimulant and nutritious regimen, and the careful exhibition of opiates to quiet the marked irritability and restore regular sleep. When the symptoms are fairly established, the aberration of mind complete with constant wakefulness and fidgetiness, generally clean tongue, frequent soft pulse, tremors, skin cool, often with copious exudation, eyes slightly bloodshot with a suspicious look, occasionally clear, countenance pale; I have found the exhibition of muriate of morphine in ʒi. doses or upwards of the tincture, or one or two grains of the substance, repeated either alone, or with the addition of $\frac{1}{2}$ grain doses of tartrate of antimony, and two or three grains of calomel, every four or six hours, supporting the strength with light nourishment, and the occasional use of beer, or brandy and water, and counteracting any marked increased determination to the head by cold applications, effectual, after three or four administrations, in inducing sleep and checking the disease; when ordinary general measures are sufficient to restore the tone and health of the system. I have ever found personal restraint injurious, one or two judicious attendants will be always able to anticipate any violence or the like; but the constitution has suffered a severe shock, and long continued care is requisite to confirm the health.

The prevalence of chronic enlargements of the inguinal glands was soon brought under notice, which seems to be connected with some peculiarity of climate. They are developed by a slight strain, hard riding, sores

on the extremities, gonorrhœa and chancres, and some times by no evident cause, or rather some internal constitutional change. Those from chancres or sores on the extremities are most acute, run their course rapidly, and terminate in suppuration, healing very slowly by granulation. Most usually the glands become indurated, enlarged, and only occasionally painful, chiefly at night, and are most intractable; neither subsiding nor reaching complete suppuration. Leeches, hot and cold applications, mild diets, quiet and exercise, mercurial frictions, blisters, pressure, the superficial application of hydrate of potass, iodine and its preparations, mercury, quinine, general attention, have all been resorted to and with doubtful benefit. Loss of health and strength is produced by the confinement, the appetite fails, a low irritative fever is induced, or severe nocturnal pains of the joints and shaft of the long bones, with great loss of power supervene, and the system becomes quite cachectic.

Such cases, together with convalescents from dysentery and fever, and other ill conditioned subjects, although with no formed disease, beyond weakness, pallor, and on occasion of any accidental injury, the health being slowly restored, peculiarly require a change of air to a convalescent station. They are long incapable of duty, or, if returned to it, soon have a relapse of illness which increases the evil. Many young men are thus after a few years of very irregular service lost, who, had they been indulged in a few months leave at some cooling bracing station under judicious care, would have been restored to the service as efficient duty soldiers. The Mahabuleshwar Hills, seem to combine many of the advantages required for invalids, in its reduced temperature and buoyant air, from its great elevation, and in its being within the direct influence of the fresh sea breezes. I am well aware of the trials that have been already made of its effects on diseased European soldiers, and have viewed with regret the unfavorable results reported; but I have ever considered, that in the first trials the very injudicious selection of cases under severe disease requiring active treatment and attention, or of chronic organic disease which nothing short of an entire removal from a tropical climate was at all likely to ameliorate, and even of cases in the last stage of sickness, has led to such a result; for I have seen individual Officers and many soldiers labouring under simple debility from repeated attacks of sickness or constitutional weakness and a great proneness to disease, return after a few months residence on the Hills, in a state that might be fairly termed robust. At present, I can only contemplate with regret the fate of several young soldiers under the unavoidable exposure, in their weakened state, to another hot and wet season.

Before closing this report, I may further add, that, at the end of Sep-

tember 1842, 35 cases remained in hospital, 8 of which only being chronic affections, and recommeneded for discharge from the service; 2 accidents in the field; 2 recruits found to be ineligible for general service; 2 worn out old soldiers, and 2 volunteers, one whose health was undermined by severe service in Persia, and the other in the Affghanistan Campaign.

Article XII.

Observations on the good and bad effects of Calomel in some of the Diseases of India. By J. Murray, Esq.

Presented, February, 1843.

In a former paper, I detailed the results of some experiments which I had instituted on dogs, with the view of ascertaining the physiological effects of calomel on the capillary and secretory functions of the gastro-intestinal mucous membrane. In prosecution of this enquiry, I would now venture to submit a few observations on the therapeutical operation of this medicine in the treatment of some of the diseases of this country.

Before proceeding to the consideration of the application of calomel to the treatment of individual diseases, it may be well to state generally its most important physiological effects. Those which have been most satisfactorily established appear to be the following; of which the first, second, and sixth, are deduced from the experiments formerly detailed, and the others have been generalized from the published records of clinical experience.

1. Calomel excites and increases the secretions from the mucous follicles, and serous exhalants of the intestinal canal; and in large doses it alters these secretions, occasioning a sero-albuminous, sanguineous, or other preternatural effusion on the inner surface of the bowels, as shewn in Exp. II., IV., XV., VI; and still more strikingly in Exp. IX.

2. It increases the flow of bile into the duodenum: and this effect appears to be produced, not simply by emulging the gall bladder and biliary ducts, but also by directly increasing the secretory function of the liver. This seems to be deducible from the fact, that, in all the experiments in which an augmented flow of bile into the deodenum was produced by the calomel, the gall bladder was observed to be distended. No obvious alteration in the appearance of the bile was observed to be produced by the calomel: but it was very generally noticed, that, while the fluids contained in the small intestines were of a yellow or orange colour, the contents of the large bowels were dark coloured.

3. It appears to excite the action of the cutaneous exhalants, and thereby to augment the insensible perspiration.

4. The last, and perhaps the most uniform, of its physiological effects on the secretory organs, is its well known operation as a sialogogue.

5. It exerts an irritant effect on the nervous system generally, and more particularly on the gastro-intestinal nerves: hence its limited efficacy, and frequent injury, in diseases and habits characterized by great nervous irritability or depression.

6. It excites and increases the physiological actions af the arterial capillaries. This effect was strikingly exemplified (in the experiments to which I have referred) by the increased vascularity of the capillary vessels of the gastro-intestinal mucous membrane, accompanied, after large doses, by sanguineous transudation. It is probably by the augmentation and alteration of tonic contractility thus imparted, that its use tends to re-establish the interrupted circulation through these vessels, and thereby to diminish their enlarged diameters and reduce their morbid vascularity, when they are the seat of inflammatory action.

7. It lowers the vital (organizable) properties of the blood, and more particularly diminishes the quantity of its contained fibrine. From this action is presumably derived its special value in those forms and stages of inflammation in which these properties of the blood are morbidly increased, and in which there is a strong tendency to the deposition of coagulable lymph: hence, too, its contra indication in those varieties and stages of disease characterized by an opposite constitution of the blood; and its injurious effect in preventing the adhesive inflammation, which limits the extent, and facilitates the outlet of internal suppuration.

It is probably to a combination of the two effects last specified, that we are most chiefly to ascribe the acknowledged efficacy of calomel as an antiphlogistic remedy: and in proportion as vascular action and the vital properties of the blood exceed, or fall below, the healthy standard, may we expect to derive greater or less benefit from its administration in inflammatory affections.

8. It increases the action of the absorbents. Hence its utility in promoting the absorption of certain morbid inflammatory exudations, whether fluid or more solid, whether effused on the surface or into the texture of organs, and whether the result of acute or chronic action: hence, also, its injurious operation, in many instances, in accelerating and extending ulcerative absorption; and hence, finally, the necessity of suspending its exhibition in all instances in which its use, instead of promoting the re-

moval of the morbid depositions for which it is administered, is found to be only causing interstitial absorption of the healthy tissues and consequent emaciation.

9. In addition to the more defined effects abovementioned, its continued use, in small doses, is supposed, on apparently just, but less obvious, grounds, to have the effect of arresting certain kinds of morbid action, and of morbid alteration or degeneration of structure, unaccompanied by inflammatory action. But more accurate and extended experience is still required to enable us to distinguish the forms of disease here alluded to, in which it is said to be useful, from those varieties (malignant or otherwise) in which it is found to be positively injurious.

1. *Dysentery.*—There is no point in practical medicine upon which a greater diversity of opinion has prevailed than regarding the utility, or otherwise, of administering calomel in dysentery. Such discrepancies would admit of some explanation, were they found to exist between medical men who had acquired their experience in different climates, or among different classes of subjects, as for instance, between the practitioner in the moist, low, maritime climate of Bombay, and one on the dry, elevated, inland plains of the Deccan; or between those who had been in medical charge of Regiments composed principally of young recruits or of soldiers who had never before suffered from dysentery, and others whose clinical experience consisted of men long exposed to a tropical climate or suffering from relapses of the disease. But when we find the most opposite conclusions deduced by men of equal powers of observation who have practised, or witnessed the practice, in the same Hospital, or who have perused the same recorded statements, we are utterly at a loss to explain or reconcile their differences.*

Amid such conflicting evidence, the inexperienced practitioner looks in vain for any fixed principle to regulate his practice. And hence his use or disuse of the remedy in after years depends, in many instances, on the fortuitous results of his first trials of it. Thus those who happen to have prescribed it in cases favourable for its administration, have too often ex-

* The three practical writers of highest authority in this country, hold different opinions on this most important point. Dr. Johnson recommends frequently repeated doses of calomel, and the speedy induction of salivation.—Mr. Annesly advocates large doses of the same medicine at longer intervals, with the daily use of purgatives, and the avoidance of salivation; while Mr. Twining asserts, that either of these plans, if generally adopted in Bengal, would very frequently destroy life.

tolled it as (after depletion) the one thing needful; while others, who have used it under circumstances unfavourable to the development of its good effects, have too frequently lost confidence in its virtue, and been thereby deterred from its subsequent employment.

The administration of calomel in dysentery must have reference conjointly to the local or anatomical, and to the constitutional, characters of the individual case submitted for treatment. Among the varying forms and types which the disease assumes, we find that in every case there is either a morbid inflammatory action which requires to be arrested — to be re-absorbed, or a morbid structural lesion to be repaired. But these local affections (whether separate or combined) may be accompanied by indications of an increase of vascular action and plethora, as in persons of a phlogistic habit, or by a diminution of vascular action and power, and a lowered condition of the blood, as in persons of feeble, relaxed, constitution; or by a special morbid diathesis, as the tubercular, scrofulous, scorbutic, or cachectic.

Keeping in view these morbid conditions, local and constitutional, in connection with the physiological effects of calomel previously specified, and with recorded experience, we may perhaps discover some general principles, which, though not of universal application, may nevertheless be found safe and useful guides for the regulation of our practice.

1. Calomel is particularly indicated in the incipient stage of acute dysentery, in which the local affection is characterized by inflammatory vascularity, and sanguineous extravasation, with an increased and morbid secretion from the mucous surface of the bowels, without the co-existence of the local effects or terminations of a more advanced stage.

To ensure its success, however, or rather to prevent its being positively prejudicial, it is of indispensable importance that its use should be preceded by adequate vascular depletion. When the patient is strong, or of sanguine temperament and a plethoric habit, the presence of febrile action will not fail to point out the appropriate remedy; but, even in the absence of general vascular excitement, the reduction of capillary action and plethora by free (and, if necessary, repeated) leeching, either over the abdomen or to the anus according to the seat of disease, forms the first and most important element of any mode of treatment, but in an especial degree of the treatment by calomel.

After suitable depletion there will remain a state of local capillary distention, with partially obstructed capillary circulation, and tendency to sero-albuminous or fibrinous deposit, and it is precisely at this stage, that the good effects of calomel are pre-eminently displayed. By its peculiar

effect on the blood and on the action of the capillaries, before referred to, it tends to arrest the morbid action and re-establish the healthy circulation through these vessels; and by increasing the abdominal secretions, to relieve their morbid vascularity. In this latter effect its beneficial agency is aided by castor oil or other mild aperient; while its injurious action on the nervous and muscular tissues should be counteracted, and the morbid irritability of these textures should be subdued, by combining it with a full dose of opium.

2. Calomel is also beneficial at a later stage of the disease; the stage of inflammatory effusion (whether serous, albuminous, or fibrinous) with consequent thickening or softening of the mucous or sub-mucous tissue of the bowels, and morbid adhesions of portions of the intestine to each other, or to contiguous viscera. Its good effects at this stage might have been inferred both from the physiological effects of the medicine on the secretory, capillary, and absorbent vessels, and from its experienced properties in analogous diseases of other organs better fitted to display its action. The great difficulty is to form the diagnosis. In this we shall derive quite as much assistance from an accurate knowledge of the patient's constitution before his illness and of the mode in which it is affected by the disease, as from careful attention to the local symptoms: and the more urgent may have been the necessity for bleeding at the commencement of the attack, so much the safer and more beneficial will be the subsequent administration of calomel.

3. The presence of abdominal venous plethora, either general or partial, during any of the stages of dysentery that have been referred to in the preceding observations, will generally indicate the necessity or utility of the occasional use of calomel. Whenever, therefore, there are general abdominal fulness and heat, with a furred tongue, or a sense of fulness and aching over the sacrum, weight about the lower part of the rectum which is relieved by resting on a pillow, or a sense of fulness and uneasiness in the right hypochondre or the epigastre, with scanty secretion of high coloured urine, we shall find that the classes of symptoms now described are almost invariably relieved (after suitable depletion) by a full dose of calomel and opium, followed by an aperient, and repeated according to the circumstances.

4. When the stage of inflammatory disorganization has arrived, (whether ulcerative, suppurative, or sloughing), calomel must always be considered to be of doubtful efficacy, and in the great majority of instances may be expected to be positively prejudicial.

If it be considered that intestinal ulceration is generally met with either

at a late stage of a first attack of dysentery, or (as more frequently happens) at an earlier period of some subsequent relapse; that the local morbid process is pre-eminently one of morbid action without power; and that the organizable properties of the blood are lowered; and if it be further borne in mind that the subjects of ulceration are generally of weak or scrofulous constitution, and that in many of them there is a mixture of nervous irritability and vital depression which is singularly inimical under any circumstances to the favourable operation of calomel, we shall have some difficulty in fixing upon any of the physiological or therapeutical properties of that medicine from which we shall be warranted in anticipating a beneficial influence from its administration. On the other hand, theory would lead us to apprehend that in very many cases it would prevent (what we are generally anxious to induce) the exudation and organization of lymph on the surface of the ulcers; and that it would accelerate (what we are anxious to arrest) the extension of the ulcerative absorption. And we find, in point of fact, that a persistence in its use not only aggravates the local symptoms (producing irritation, extension, or sloughing of the ulcers,) but in many instances induces an irritative febrile action, with great vital prostration, and eventually permanent impairment of the constitution: while in less favourable cases, and particularly in persons of scrofulous diathesis, it too often produces either rapid destruction of the intestinal tissues or suppuration of the substance of the liver.

The use of calomel when administered under the circumstances just specified, is usually justified on the principle that in dysentery there is a specific morbid action, which mercury has a specific power in controlling. In accordance with this opinion its use is diligently persevered in until the system is brought under its influence, without reference to its intermediate effects on the bowels or constitution, or I ought rather to say, the non-improvement or aggravation of the symptoms is considered to indicate the necessity for a more speedy induction of the constitutional effects of the medicine.

But even the admission (which, with our present knowledge, I should consider a dangerous admission,) of the specific doctrine both of the disease and of the remedy, would scarcely justify the treatment now referred to, even in the management of syphilis, for the cure of which, beyond all other diseases, mercury may be considered to be pre-eminently a specific, when occurring in feeble irritable constitutions, similar to those which are the usual subjects of ulcerated bowels, the use of this medicine requires constant watching, and is invariably suspended, when the ulcers assume an irritable, phagedenic, or sloughing appearance, particularly if accompa-

nied by hectic symptoms and great prostration. How much more imperative, then, ought to be the abandonment of this remedy in dysenteric ulceration, when the local disease appears to make progress, and the constitution is evidently giving way, under its influence.

Having considered the indications for the use or disuse of calomel furnished by the anatomical signs and local symptoms of dysentery, it remains to notice those derived from its constitutional characters. And it may be safely affirmed, that it is upon the careful and anxious adaptation of the remedy, not less to the abstract disease than to the patient who is the subject of it, upon our personal knowledge of his constitution, the character of his former illnesses, and the effect of remedies upon them, in short upon that individual (not numerical) experience, which was in former times so much valued both by patient and practitioner, that the success of our treatment will very materially depend.

1. If the constitution be healthy and robust, or if there be excess of vascular action; and if the patient be of recent arrival in the country, and has had no previous attacks of the disease, we may in general anticipate benefit from the occasional administration of calomel. It is not alone that such constitutions are more favourably affected by the medicine, though this is by no means unimportant, but it is also, and more especially, because the disease in such patients is generally attended with that condition of the blood, and, if not early arrested, is most likely to produce those local effects, which calomel is so peculiarly calculated to remove. It is of indispensable importance however, that its first exhibition should be preceded by the required vascular depletion. This, I am aware, is the general practice. But I do not here allude simply to the efficacy of depletion as an antiphlogistic remedy; but also to its value as an essential preliminary to the safe and successful use of calomel. For cases may arise in which it may be supposed by those who advocate the direct sedative action of this remedy that no injury can result (further than that arising from loss of time) from administering one or two doses until the precise nature and extent of the disease shall be more fully developed: whereas, if its stimulant as well as alterative operation on the capillary vessels be admitted, it follows that every dose that is exhibited before vascular action is adequately reduced by depletion, must necessarily aggravate, instead of relieving, the disease, and increase its tendency to terminate in ulceration or suppuration.

2. If the patient, on the other hand, be of a naturally feeble, and relaxed habit, or if the vascular system has been much lowered from protracted residence in the country or from pre-existing disease, we have a

state of constitution unfavourable to the beneficial action of calomel, but not directly contra-indicating it, while the local affection may be of that character which this remedy is well fitted to correct and remove. To such cases no general rules can apply : each individual's case must be judged and studied by itself. It must be used with great caution, regard being had to the possibility of converting a state of local phlogosis, with or without morbid effusion, into disease of an ulcerative type: and when we are in doubt as to its propriety, we shall do well to prescribe a milder preparation of mercury.

3. When, in addition to constitutional debility, there are indications of a tubercular, cachectic, or other special morbid diathesis, and if it be a case of relapse, and the previous attack has been treated by mercurials, (one of the inconveniencies of which is the pre-disposition which it gives to such relapses,) under such circumstances we have a modification of disease, in which the use of mercury as a general rule, is distinctly contra-indicated, both from constitutional and local causes. The morbid states of constitution here referred to, it is well known, frequently originate in the use of mercury, and are in general injuriously affected by that medicine under any circumstances : while the local dysenteric disease, in such subjects, is usually modified in its characters, affects principally the mucous glands and follicles, and shews a strong tendency to terminate in a low intractable form of ulceration, which calomel may be expected to accelerate and aggravate.

In this form of the disease (usually characterized by wasting of flesh, muscular weakness, and nervous irritability or exhaustion, with the addition frequently of hectic symptoms) in which the use of calomel is so generally hazardous, Ipecacuan as is well known, affords a valuable resource, no less than in the more phlogistic types, after the further use of the former remedy has become unnecessary or inadmissible. And some experiments, which I have recently taken occasion to make with this medicine, seem to shew, that its physiological action on the capillary and secretory vessels of the intestinal mucous membrane is analogous, though inferior in power, to that of calomel ; and that it ought, therefore, to be administered on a similar principle, that is, in full doses (so as to direct its action to the intestinal capillaries instead of the cutaneous exhalants) combined with full doses of opium, repeated at considerable intervals, and alternated with aperients.

But even in this atonic form of dysentery, symptoms may occur, (as

the absence of feculence in the discharges*) for which two or three doses of calomel, combined with opium and camphor, may be given with safety and benefit. As this remedy, however, is in such cases, administered, not in the vain hope of curing the disease by it, but for the purpose of fulfilling a special indication, its use ought not to be persevered in, if it fail in accomplishing the desired object. When we find, on visiting our patient after a dose of calomel, that he has passed a more quiet night, and that there has been adiminished frequency and increased feculence of the evacuations, even though a great deal of faintness and prostration (as some times happens) may have attended its operation, we shall be encouraged to repeat it, provided there be a clear indication for so doing, taking care to administer due nourishment, and even stimulants if necessary, during its operation. But on the other hand, where the morbid character and frequency of the evacuations increase rather than diminish, with a red brown tongue, a retracted abdomen, and an irritative action of the heart and arteries; and particularly when, in addition, the patient *feels* that the medicine is doing him harm rather than good, under such circumstances its discontinuance cannot be too imperatively urged.

The two sets of cases now referred to; opposed as they are to each other in their constitutional characters, may present analogous anatomical characters: but they nevertheless constitute two widely different diseases for all the purposes of medical practice. Hence the indispensible necessity of making each case the subject of distinct study. And above all is it important to bear in mind (what is too often lost slight of) that the use of calomel in dysentery is generally, if not invariably, productive either of positive benefit or of positive injury; that we can never be assured of its precise effect in any instance until it has been tried; and that it is there-

* The nature of the morbid action by which the yellow feculent matter so frequently found in the small intestines in dysentery, suddenly and entirely loses its feculent character, and is converted into a dark brown watery fluid or other morbid product, on passing into the colon and rectum, has not hitherto been explained, nor has the phenomenon itself been sufficiently dwelt upon by practical writers. And yet it is one of great practical importance. It shews that the entire absence of feculence in the discharges may arise, neither from the suppression of the biliary and other secretions into the small bowels, nor from the retention of fæces in the upper part of the canal; and it further shews that the feculent evacuations which follow the administration of one or two full doses of calomel are not always to be ascribed to a restoration of the biliary secretions produced by that medicine, but may be the result of its operation on the morbid capillary action of the large intestines, whereby the healthy feculence passes through them unchanged. And the same effect is frequently produced by full doses of Ipecacuan.

fore incumbent upon us carefully, to observed the result of its first trials, and to be guided thereby in regard to its subsequent repetition.

I conclude this part of the subject with a brief allusion to the most eligible mode of administering calomel in dysentery. In the first stage, our object being to increase the abdominal secretions and to produce a direct antiphlogistic effect on the affected capillaries, it ought to be given in full doses (about ten grains) and at considerable intervals, combined with two or three grains of opium. Notwithstanding the diversity of medical opinion which has at different times prevailed regarding the use of opium in dysentery, it is now very generally admitted to be a valuable auxiliary remedy, when conjoined with such medicines as act on the capillary or the secretory functions of the bowels. Its conjunction with calomel is peculiary required, both to counteract the local and constitutional irritating action of that medicine, and also to subdue the morbid irritability of the nervous, muscular, and capillary tissues of the bowels, which constitutes an important element of the disease. The exhibition of calomel ought also to be alternated with frequent and moderate doses of mild aperients (as castor oil in mucilage of gum arabic), not simply to remove feculent accumulation (which rarely exists), but also and more especially to aid its operation in restoring the normal secretions from the mucous surface of the bowels, and thereby to promote the resolution of the disease.

When prescribed at a later stage our object will be rather to obtain its alterative effect both on the secretions and the capillary circulation ; and probably a preference will then be given to the form of blue pill given in smaller doses and at shorter intervals, and combined with a smaller proportion of opium. Its action will now be materially promoted by combining it with Ipecacuan and taraxacum, and in the atonic form of the disease, with camphor and quinine.

Article XIII.

Annual Report of the 25th Regiment, N. I. for the year 1841.*

By A. Wright, Esq.

Presented by the Medical Board, June, 1842.

General Observations.—In reporting on the state of health of the 25th Regiment N. I. it will not I trust be out of place to mention the service in which the corps has been employed during the past year.

On my joining the corps in the beginning of March, it was stationed at Kotra in Cutch Gundava; on the 29th we left, proceeding along the base of the Hala mountains, and after a fatiguing march, we arrived at Dadur on the 6th April; distance 72 miles. Halted one day, and on the 8th accompanied by the wing of H. M. 41ts Regiment, 1st Troop Horse Brigade, 3rd Company, 1st Battalion of Foot Artillery, we marched on route

* *Stationed at Quetta.*

Strength	1062	
Included in the returns	909	Dec. 31, 1841.
Absent on command, beyond the division or on leave	153	
Total	1062	

Number of Sick.

Remained 31st December 1840	71
Admitted	1769
Discharged	1775
Died in Hospital	28
Remaining 31st December 1841	37
Average daily number of sick for the year	6
Average number of convalescents	None
Died without receiving medical treatment	..
Changes since 31st December 1840	..
Recruits joined 1st January to the 31st December 1841	93
Discharged from the service on account of disease	3
Discharged from the service on account of other causes	5
Invalided	10
Pensioned	26

to Quetta via the Bolan Pass. On arriving at Seriab we were ordered to proceed to Moostung, where we arrived on the 19th; the Regiment remained here until the 15th of June, when we left for Kelat, where we arrived on the 20th. We were at Kelat until the 1st October, when we marched on route for Dadur via the Bolan Pass, halted for fourteen days at Moostung, and arrived a Dadur on the 30th; here we remained until the 20th December when we were ordered to proceed to Quetta, where we arrived on the 26th.

The whole of the countries, traversed on this route from Kotra to Kelat, agreed in their aridity and desert aspect; as also in the nature of their soil, which is a deep, rich alluvial mud, inclosed in valleys between abrupt, high, barren, mountains; but their elevation above the level of the sea, varies very materially; Cutch Gundava is quite a low country, whereas the valleys of Moostung and Kelat above the Bolan Pass, have an elevation upwards of six thousand feet. In consequence the temperature varied very much; at Kotra and Dadur, the days were very hot,—the thermomenter rising to 100 in tents; in the Pass it suddenly became cold, the nights were raw and chilly, and on two occasions snow fell; the weather remained cold and wet, until the middle of May. At Kelat in June, July, and August, the days were very hot, although the nights remained pleasant. In September it suddenly became cold, more especially in the mornings, and towards the end of the month it was freezing. In October the days were pleasant, but the nights very cold, above the Pass; but at Dadur the heat was still great during the day.

With the exception of the months of July, August, and part of September, both Officers and men have been exposed to all the varieties of climate in tents; during the above mentioned months whilst stationed at Kelat, we occupied houses in the fortress.

From the varieties of climate, and arduous duties in which the Regiment has been employed, it would be difficult to award to any one set of causes its due share in the deterioration of the health of the Regiment.

Prevailing Diseases.—Bowel complaints and fever of various types have formed the bulk of the cases that have been admitted into the hospital of the Regiment during the past year.

Fevers. The fever most frequent in this country is an intermittent, one chiefly quotidian, a few tertian, and still fewer approaching the form of remittent; in general unaccompanied with any particular visceral derangement. In July and August, whilst at Kelat, a few cases were complicated with diarrhœa and congestion in the brain, and most all of them with

jaundice; an emetic on admission followed by a dose or two of calomel and pulvis antimon. or antimon. tart. with saline mixture and afterwards purgatives, are what I usually prescribe until the skin becomes cool. The quinine is then given or pulv. cinchonæ, and the disease is generally subdued in the course of a few days ; in a few cases where the quinine in very large doses has failed to stop the disease, I have found, combining it with sulph. zinci hase the desired effect. I have very seldom had occasion to bleed; unless when there is determination to the brain, in sepoys I always prefer topical to general bleeding unless the symptoms are very urgent. Where the tongue remains brown and dry with symptoms of congestion in the brain, I give calomel with pulvis antimon. and introduce mercury into the system by friction, until the gums become tender, at the same time giving an occasional dose of extract. colocynth. at bed time.

Total number of fevers admitted during the year is nine hundred and sixty nine ; of which seventeen have died.

Hepatitis.—No case of this disease has occurred during the year.

Dysentery.—This has been a common disease amongst the sepoys, and several cases have proved very obstinate; the treatment I have generally pursued is, on admission to prescribe a full dose of calomel and opium, following it up with a dose of castor oil. I then give the dysentery pills of pulvis Ipecac. pil. hydrarg. and opium or pulvis Ipecac. extract gentian and extract hyoscyami with a dose of castor oil, every alternate morning. Should there be much tenesmus, with bloody stools and tenderness in the abdomen, I apply leeches and blisters ; if the disease does not yield to this treatment, I give calomel at night, and introduce mercury into the system by friction, and when the evacuations have become natural, begin with astringents and tonics. The sequelæ of the disease are often more obstinate and unmanageable than the disease itself, and the patient too often relapses, and after long lingering dies from absolute debility. The total number of cases of dysentery and diarrhœa during the year has been one hundred and thirty-nine; of which, eight have terminated fatally.

Rheumatism.—This has been a common disease, but unless in one or two cases, I have always found it very manageable. In the acute form I give diaphoretics, pulvis Ipecacuan. comp. vin colchici, &c.: in chronic cases I have found the hydriodate of potass an invaluable remedy in either curing or at least very much relieving the disease.

Cholera.—I am happy to state that no instance of this disease has occurred in the Regiment.

Surgical cases.—In field service it may be expected that something may have occurred worthy of notice amongst the surgical cases, but such is not the case. On my arrival at Kotra I found a number of ecthymatous ulcers, and they have continued to prevail more or less during the year: they are much more common in Cutch Gundava than in this country; they appear chiefly on the lower extremities and hands, though no part of the body is exempt.

The treatment I have found most successful is to destroy the diseased structure with lunar caustic; afterwards applying a poultice for a few days, until the sore puts on a healthy appearance; I then apply straps of adhesive plaster with a bandage, giving the patient an occasional dose of an aperient; they in general readily heal up by this treatment. I have found change of air have a good effect, when other means had failed.

Camp; Quetta, 13th January, 1842.

Article XIV.

Annual Report of the Civil Surgeon of Ahmedabad for the year 1841.* By S. Sproule, Esq.

Presented by the Medical Board. May, 1842.

The *Jail* at this station has been healthy during the year. No epidemic has appeared amongst the prisoners who have suffered merely from those diseases incidental to the season and to which natives under any circumstances are liable. The constitutions of many of the prisoners

*Average daily number of prisoners in the Jail	745
Police of the city	288
Sebundies	52
Prisoners at Sadra	40
Military detachment at Sadra	66
Guzerat Koolie Police corps	590
Number of sick in the Jail.	
Remained on 31st December 1840	28
Admitted in 1841	623
Discharged	602
Died	31
Remaining on 31st December 1841	18
Number of sick in the Civil and Insane Hospital.	
Remained on 31st December 1840	55
Admitted in 1841	308
Discharged	294
Died	10
Remained on 31st December, 1841	59
Number of Sick in the Guzerat Koolie Police Corps.	
Remained on 31st December 1840	18
Admitted in 1841	418
Discharged	416
Died	2
Remaining on 31st December 1841	18
Number of sick in the Political Department at Sadra.	
Remained on 31st December 1840	3
Admitted in 1841	222

have suffered from the effects of opium to the use of which they had become habituated, and some affirm that previous to their coming into jail, 3i. to ii. has been their usual daily allowance. It would not be altogether safe to deprive such persons suddenly of the drug, but even although the quantity may be gradually reduced and never entirely taken away from them, still the constitution suffers so gradually and imperceptibly as to render the result of disease, however slight, very uncertain. Such patients do not recover or regain their strength as speedily as one would suppose, as even a slight attack of fever or bowel complaint renders them invalids for weeks. This however is more particularly applicable to those men who returned here from the Tanna Subsidiary Jail, all of whom succumb very much to disease however slight. The tone of their constitutions is very much lowered, and it was amongst these men, the old and infirm, and men whose constitutions were worn out either by the effects of opium or other causes previous to their coming to the Jail, that the mortality has taken place during the year. But in almost all the cases I have witnessed, death seemed to be more attributable to the infirmity and constitutional debility previously existing, than to the effects of the disease which the patient laboured under previous to his death, as the symptoms were severe, a slight fever or bowel complaint carrying off the patient in a few days after admission. The accompanying cases No. 1 and 2, afford examples. One man died from effusion into the chest occurring during remittent fever, and another died of cholera which occurred during convalescence, from dysentery. He died after twelve hours from the first appearance of the disease, and resolutely refused to take any medicine whatever: he would not swallow it when put into his mouth.

During the last rains, I have observed a great tendency to sloughing of the cornea in men of worn out constitutions and feeble habit of body. It

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Discharged	216
Died	3
Remaining on 31st December 1841	8

Average daily number of sick.

In the Jail	24
In the Civil and Insane Hospital	56
In the Guzerat Koolie Police Corps	15
In the Political Department at Sadra	8
Average number of convalescents	None
Died without receiving medical aid	None

General Observation.

Prevailing diseases.

Remittent and Intermittent Fever and Bowel Complaints.

was certainly not the result of inflammation as it was not till the third or fourth day after, that a subacute inflammation came on, followed by serous deposit under the conjunctiva. Four cases of this description occurred; three of the men had been at Tanna; two were in hospital; one came in with slight fever, the other with slight dysentery; both were convalescent and in the evening their eyes were quite well; next morning however matter was formed betwext the laminæ of the cornea which sloughed until the humours were discharged. Both these men died in four or five days after, exhibiting no other symptoms than extreme emaciation and debility. The other two men were not labouring under any other disease; they went into their cell quite well without any feeling of uneasiness about the eyes, but in the morning the corneæ of both eyes were in a sloughy state; there was no pain or irritation attending this state of the cornea, and these were only slight even on the third or fourth day, when a kind of subacute inflammation made its appearance, followed by serous deposit under the conjunctiva. The treatment consisted in the application of nitras argenti to the slough with a view to cause its separation and induce healthy action, constant counter irritation on the temples and nape of the neck, together with quinine and other tonic remedies, with a more generous diet than the man had been accustomed to. When serous infiltration had taken place, scarifications from the circumference towards the centre of the eye-ball were had recourse to, followed by fomentations. As soon as the appetite was improved, meat diet was allowed them; one of these men had formerly lost one eye under similar circumstances. Ulcers of the cornea also required constitutional treatment similar to the above, before they could be induced to fill up.

The greatest number of deaths occurred in the last five months of the year; during this period, dysentery, diarrhœa, and fevers, were prevalent amongst the prisoners, and the old, infirm and debilitated subject was carried off by a slight attack of either one or other.

Remittent fever was the only disease of a severe character which appeared amongst the prisoners; intermittents were not generally severe, but the patient did not get rid of the fever speedily, and he was usually left in a debilitated state. In my treatment of remittent fever, I have used the tartar emetic solution with great advantage, giving small doses of calomel and antimonials at bed time, followed by a purgative in the morning, the patient being kept under the influence of the tartar emetic during the day. In two or three days there is generally complete remission of the fever, when quinine is given to ward off an attack; in a few days more the type of the fever either becomes changed to that of the intermittent, or the patient remains

entirely free from it. The cure is completed by substituting for the quinine, bark or some tonic bitter infusion with a mineral acid and a more generous diet. I have experienced very good effects from the administration of tartar emetic in the remittent fever of natives, and have used it extensively in the different hospitals and departments during last season. It may cause vomiting once or twice, but this may be considered more beneficial than otherwise, and I have only seen two cases during the season (one in the Jail Hospital and one in the Hospital of the Koolie Police Corps) where I was obliged to discontinue it on account of the vomiting and purging which were always induced by its administration. Local affections are of course to be met by the local abstraction of blood and application of blisters, general bleeding I have not been obliged to have recourse to in any case, and of all classes of patients it is the least applicable to prisoners. I may here mention that in severe cases, I do not wait for the complete restoration of the natural alvine evacuations and a clean tongue for the administration of quinine, but whenever a complete remission of the fever takes place, I give it with the view of warding off or lessening the subsequent attack and making a break in the disease. In no case have I had cause to regret this practice. The intermittents presented nothing peculiar. Dysentery was not in general formidable, occurring in a patient with a tolerable constitution, and it was only that class of men already mentioned to whom it proved fatal ; and they did not seem to die from the effects of the disease but from pre-existing constitutional causes. The same is applicable to diarrhœa. The mortality has been rather less than during the previous year.

The system of dieting seems to work well, and all the prisoners have had warm clothing served out to them at the commencement of the cold weather. 651 cases have been treated during the year, and 31 deaths have occurred being a little more than $4\frac{3}{4}$ per cent on the cases treated, and above 4 per cent on the average strength of prisoners. The mortality has been greater in proportion amongst those men who have returned from Tanna, than amongst the other prisoners. The following statement refers exclusively to them.

Remaining in Jail on 1st January, 1841.	Discharged from Jail during the year.	Remaining in Jail on 1st January 1842.	Died during the year.	Admitted into Hospital during the year.
168	55	101	12	134

Thus the mortality amongst these men has been 9 per-cent on the ad-

missions, whilst it has been less than $3\frac{1}{2}$ per cent on the admissions amongst the other prisoners in the Jail.

In the Civil Hospital some few operations have been performed since I have had charge. I have operated on four cataracts and amputated one penis, in all cases with complete success and relief to the sufferers; various other minor operations have also been performed. Four cases of attempted poisoning have been brought to the Hospital, three from opium and one from datura stramonium; in all the stomach pump was applied with complete success and the patients eventually recovered. Some bad accidents have also been admitted into the Hospital during the year.

The Dispensary practice continues to be considerable during August, September, and October; the number of inhabitants who applied for and received relief has been great.

In the Political Department at Sadra and in the Hospital of the Koolie Police Corps nothing particular has occurred; intermittent and remittent fever and bowel complaints have been the prevailing diseases.

This has been a healthy season altogether throughout this province with the exception of the Dholka Pergunna, where fever was very prevalent, during October and November, and some few cases proved fatal. I sent at different times supplies of medicine for the use of the inhabitants on the requisition of the Collector. The inhabitants of this, I am informed, suffer more at that season than those of any other Pergunna under the Collectorate. In this city fevers and bowel complaints were prevalent during and after the rains, but in no very inordinate degree.

Article XV.

Contributions to Vegetable Embryology, from observations on the origin and developement of the Embryo in Tropæolum Majus. By Herbert Giraud, M. D. Edin. F. B. S. E. Ext. Mem. Med. Soc. Edin. &c. &c.

The rapid and unprecedented advances in discovery, which have marked the progress of human and comparative physiology during the last ten years, are in no department more remarkable than in that which relates to the production and developement of organized tissues; whether of the same, or of new and distinct organisms. In this field more than in any other, the labours of physiologists have been richly rewarded.

The researches of Baer,* Valentin,† Purkinje,‡ Krause,§ and Wagner,‖ on the continent, together with those of Allen Thomson,** T. Warton Jones,†† and the more recent observations of Dr. Martin Barry,‡‡ though many of their results differ in points of minor importance, have yet combined to render the history of animal embryology clear and consistent: so that we can now speak, with tolerable certainty, of the formation and mode of origin of the *germinal vesicle* and the *ovisac*, of the nature of the *Graafian vesicle*, and of the *true chorion:* of the relations of the *corpus lutium* : and of the precise period of the origin of the *embryo*, with the changes it undergoes during the progress of its developement. Much has also been done towards elucidating the manner of the production and growth of the tissues ; and the almost contemporaneous discove-

* Baer, Lettre sur la formation del' Æuf. translated by Breschet, Paris, 1839.

† Valentin Handbuch der Entwickelungsge Schichte des Menschen, &c. Berlin, 1835.

‡ Purkinje. Encyelopädisches Wörterbuch, Band X. Berlin, 1834.

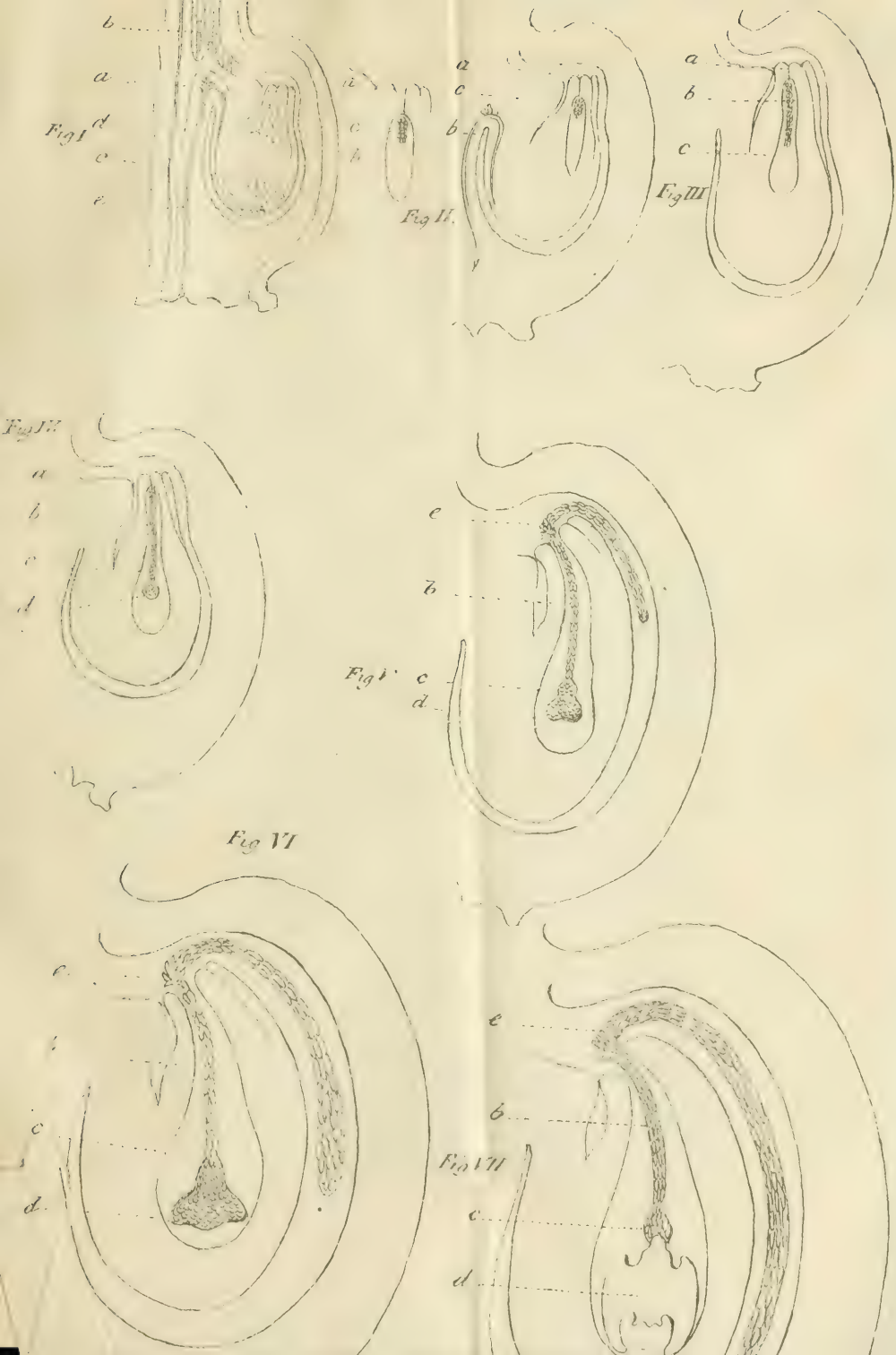
§ Krause, Müller's Archiv. 1837.

‖ Wagner, Lehrbuch der Vergleichenden Anatomie. Leipsig, 1834–5.

** Allen Thomson, Art. Generation in Todd's Cyclopædia of Anatomy and Physiology.

†† T. Warton Jones, Lond. and Edn. Phil. Magaz. September, 1835.

‡‡ Martin Barry, Philosoph. Trans. 1838-39-40 and 41.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Contributions to Vegetab
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Majus. By Herbert (

Mem. Med. Soc. Edin.

The rapid and unprecedent
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The researches of Baer,* V
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mode of origin of the *germi*
the *Graafian vesicle*, and of
corpus lutium : and of the
with the changes it undergo
Much has also been done to
tion and growth of the tissue

* Baer, Lettre sur la formatic
† Valentin Handbuch der F
Berlin, 1835.
‡ Purkinje. Encyelopädische
§ Krause, Müller's Archiv.
‖ Wagner, Lehrbuch der Ve
** Allen Thomson, Art. Ge
Physiology.
†† T. Warton Jones, Lond. a
‡‡ Martin Barry, Philosoph.

ries of Schwann * and Schleiden † have shewn how intimate is the correspondence between the structure and growth of animals and plants; and that in the developement of tissues the same phenomena are exhibited in both. In the vegetable kingdom the discoveries of Amici, Brown, and Brongniart, and the still more recent ones of Schleiden, Mirbel, Spach ‡ and Meyen, have disclosed a series of phenomena that were never contemplated in the days of Kælrenter, Gærtuer and Linnæus. But, whether from errors in observation, or from illegitimate deductions, the conclusions of these several phytologists have been so little accordant with each other, that the true theory of Phænogamic embryology is far from being clearly determined; for while, on the one hand Brongniart, Mirbel, Spach and Meyen, maintain the old view that the *embryo* is primarily developed in the substance of the *ovule*; Schleiden and Wydler, on the other, regard it as a body foreign to the *ovule* and taking its origin in the *anther cell.*

According to Schleiden:—" at a very early period of the developement of the ovule, a cellule from the interior of the *nucleus*, which originally differed not from the surrounding ones, is developed to an extraordinary degree and presses more and more on the surrounding tissue of the nucleus, which is then absorbed from within outwards. This cellule is the *embryo-sac* (membrana amnii. Malpighi, sac embryonnaire, Brongniart, Quintine, Mirbel:) which exists in all flowering plants without exception, even before impregnation. This embryo-sac contains a substance which is gradually transformed into cellular tissue; and being ultimately developed within the embryo-sac, forms (when not absorbed by the growth of the embryo) the *endosperm* or *albumen* of most authors. The *pollen tube* having made its way through the conducting tissue of the stigma, and having reached the ovule, penetrates the aperture in the teguments, traverses the summit of the *nucleus*, and following the intercellular passages, arrives at the embryo-sac. Having reached this point the pollen-tube presses before it the membrane of the embryo-sac, which is then folded all around it, so that the extremity of the pollen-tube appears to penetrate into

* Schwann Mikroscopische Uutersuchungen uber die Uebereinstimmungen in der struktur und dem Wachsthum. der Thiere und Pflanzen. Berien 1838-39.

† Schleiden, sur la formation de l' ovule, et l' origine de l' embryon dans les phanerogames, Anu des Scien. Nat: 2nde Série. Botan. Mars, 1839.

‡ Notes pour servir á l' histoire de l' embryologie végétale par M. M. Mirbel et Spach Anu des Scien Nat. 2nde Serie. Botan, Avril. 1839.

the sac; though in reality it is outside of it. Thus inclosed the extremity of the pollen-tube enlarges into the form of an oval spheroid, and its contents are converted into cellular tissue; at its sides are formed the lateral organs or cotyledons, from which the extremity remains distinct, and is developed into the plumule. The portion of the tube situated above the embryo, and which is embraced by a duplicature of the embryo-sac, is gradually, but completely obliterated; so that the embryo is then left free within its sac. In this way the embryo is formed of two membranes: the indented embryo-sac, and the membrane of the pollen-tube. With these statements of Schleiden, the still more recent observations of Wydler * agree, except as regards the folding in of the embryo-sac, which this observer has never met with: but it appeared to him that the cavity of the sac elongated itself under the form of a straight canal, even to the summit of the ovule, and there opened in the *endostome* and received the extremity of the pollen-tube.

The importance of forming a determinate conclusion regarding the origin of the embryo is greatly enhanced by the influence it must have in affecting our notions of what are at present considered the male and female organs (stamens and pistils;) for if the above observations of Schleiden be correct, the anther must be considered as a female ovarium, and each grain of pollen as the germ of a new organism, being determined in its developement by the secretions of the embryo-sac: this last structure therefore being held to correspond with the male organ.

In the most recent work on Structural and Physiological Botany (the "Leçons de Botanique of M. A. de St. Hilaire,) the indeterminate state of our knowledge regarding the origin of the vegetable embryo is pointed out, and the author concludes by saying, "Espérous que de nouvelles recherches achéveront de lever les doutes que l'on pourrait concevoir encore." With the hope of removing some of the uncertainties which are yet attached to this litigated question, and of gaining some certain information on many interesting, but yet undetermined points, I attempted the following observations on the mode of developement of the embryo in Tropœolum Majus, the results of which will I think materially contribute towards forming a true theory of phœnogamic embryology.

The extreme simplicity of the *ovarium* of the Tropœoleæ, their *monospermous carpels*, and the large size of their *ovules*, render the indivi-

* Wydler, Note sur la formation de l'embryon (extrait d'une lettre de M. Wydler, professeur à Berne communique par M. A. St. Hilaire a l'Academie des Sciences a Paris, October, 1838.)

duals of this family peculiarly fitted for observations of this kind, and in these respects they are resembled by their allies, the Geraniaceæ, and, in fact, by most plants with one seeded carpels.

The following observations are arranged under seven general heads, corresponding with as many progressive periods in the growth of the ovarium, extending from the completion of the anatropous developement of the ovule to the perfect formation of the embryo; a period extending from the commencement of the expansion of the bud to the complete formation of the fruit.

First Period. On making a perpendicular section of a carpel (just before the expansion of the bud) from its dorsum inwards towards the axis of the pistil, the solitary ovule is at the same time divided, and is found to have completed its *anatropous* developement. (fig. I.) Continuous with that part of the *columella* which forms the placenta, is a portion of rather firm cellular tissue enclosing a bundle of vessels and forming the so called *umbilicus*: this, with the vessels it encloses, descends in apposition with the placenta to form the raphê; (fig. I. a.) and, near the point where it terminates in the base of the ovule, the vessels gradually terminate in closed extremities. The nucleus has only one tegumentary membrane, at the apex of which is presented the exostome opening close by and to the outside of the umbilicus (fig. I. a.) The conducting tissue of the style may be traced between the columella, and that prolongation of the carpellary leaf which forms the style, into the carpellary cavity as far as the exostome, with which it is brought in contact by the anatropous developement of the ovule. (fig. I. b.) The vessels which proceed along the placenta, to form the raphè are spiral vessels and annular ducts; and, at the point at which they make a turn downwards towards the chalaza, many of them end in closed extremities, while the vascular structure of the raphè usually terminates in a single vessel. (fig. I. d.)

Second Period. (Fig. II.) During the expansion of the bud, before the dehiscence of the anther, and therefore before impregnation, a small elliptical cavity (fig. II. b.) appears near the apex of the nucleus, having a delicate lining membrane, formed by the walls of the surrounding closely approximated cells. This cavity is the *embryo-sac* (sac embryonnaire, Brongniart and F. G. F. Meyen; membrana amnii, Malpighi: Quintine, Mirbel) from the apex of which a minute canal may be traced through the nucleus to the exostome (fig. II. a.) At this period, the apex of the embryo-sac encloses a minute quantity of organizable mu-

cilage, containing many small bodies having the appearance and characters of cytoblasts. (c.)

Third Period. (Fig. III). The apex of the nucleus is now inclined, and the exostome approximated to the axis of the pistil. The cavity of the nucleus (embryo-sac) is much enlarged and lengthened: its mucilage has disappeared, and in the place of it is formed *an elongated diaphanous utricle* (utricule primordiale, Mirbel; visicule embryonnaire; F. G. F. Meyen: l' extremite anterieure du boyan pollenique, Sehdeiden,) enclosing a quantity of globular matter (globulo cellular cambium, Mirbel: cytoblasts, Schneiden) (b.) This *primary utricle* is developed wholly within the embryo-sac, from whch it can be clearly seen to be distinct.

Fourth Period. (Fig. IV.) *After impregnation.* With the increased developement of the embryo-sac, the primary utricle, as it elongates, becomes distinctly cellular, by the developement of minute cells from the *cytoblasts* in its interior: while at the extremity next the base of the nucleus it is terminated by a spherical extremity consisting of numerous globular cells, (d.) The primary utricle, at this period, assumes the character of that organ described by Mirbel as the *suspensor:* and its spherical extremity constitutes the first trace of the embryo. The pollen-tubes are not found to descend into the carpellary cavity; but the *fovilla* with its *granules* is seen abundantly diffused through the passage leading from the style to the *exostome*, thus proving that impregnation has occurred.

Fifth Period. (Fig. V.) At this stage the spherical extremity of the suspensor enlarges and almost entirely fills the cavity of the embryo-sac; and it now becomes more evident that it constitutes the axis of the embryo. (d.) The suspensor is correspondingly lengthened by an increase in the number and size of its cells, while its upper extremity now protrudes through the apex of the embryo-sac, the apex of the nucleus, and through the exostome; from this, its upper extremity, there is a considerable developement of cells, many of which terminate abruptly and hang loosely in the passage leading from the style, while others unite in forming a process, which passes round the outside of the ovule (in the direction of its axis) into the carpellary cavity, and between the inner surface of the carpel and the outer surface of the ovule (e.) From the important functions which I believe this organ to perform, it may not be improper to point out more particularly its intimate structure. It is composed of from nine to twelve rows of elongated cells (*cylindren chyma*) and its

extremity resembles in its general appearance, and in the anatomical condition of its cells, the spongiole of a root. When the ovule is removed from its carpel, and slight traction is made upon this cellular process, the suspensor, with the attached embryo, may be withdrawn from the embryo-sac, through the exostome and apex of the nucleus; thus proving the perfect continuity of this cellular process with the suspensor, and through it, with the embryo itself.

Sixth Period. (Fig. VI.) The suspensor is now more attenuated; the cellular process with which it is organically united has reached the outside of the base of the ovule, and is of firmer consistence; the cells of its extremity abound in cytoblasts, shewing it to be yet progressing in its developement. With the growth of the embryo, two lateral processes are observed to proceed in opposite directions from the sides of its axis, forming evidently the first traces of the cotyledons (d.)

Seventh Period. (Fig. VII.) All distinction between the nucleus and its tegumentary membrane has now ceased, and the embryo-sac has one only envelope. The cellular process connected with the suspensor has become so much developed, that its extremity has passed around the base of the ovule, and is directed towards the axis of the pistil. The lateral processes of the axis of the embryo have become distinct fleshy cotyledons, extending backwards from their point of origin towards the radicle, as well as forwards in the direction of the plumule: both of which organs they enclose in corresponding depressions in their opposed surfaces (d.) With the developement of the radicle towards the exostome, the opposite extremity of the axis of the embryo, in the form of the plumule, extends towards the base of the ovule, but is still enclosed in the depression formed by the concavity of the cotyledons. At each side of this extension of the axis the first traces of the plumular leaves make their appearance, alternating with the cotyledons.

The subsequent changes consist chiefly in the great developement of the cotyledons, which ultimately come to occupy the whole cavity of the nucleus, filling the space usually taken up by the albumen, which is awanting in this natural family.

The results of the foregoing observations derive importance; 1st, from their tending in no slight degree to settle the question regarding the origin and mode of developement of the embryo; 2nd, from the light they serve to throw upon many obscurities relative to the morphology of the embryo; and 3rd, from the discovery of an organ, which from its anato-

mical relations, and apparent functions, would appear to be *the true organic placenta.*

I have shewn that the formation of the embryo-sac, and the developement of cytoblasts within it, take place at a period prior to the impregnation of the pistil: and that even the primary utricle itself, which Schleiden considers as the extremity of the pollen-tube, makes its appearance before the emission of the pollen from the anther, and before the expansion of the three lobed stigma; therefore the origin of that organ cannot be referred to the influence of impregnation; as had been already pointed out by Mirbel and Spach in the case of Zea Mays. At its first appearance the primary utricle is seen to be quite distinct from the embryo-sac, even at its apex, with which however it is brought in contact at a subsequent period, and ultimately even penetrates that membrane: so that in this instance at least the primary utricle can not result from a depression or involution of the embryo-sac; as has been maintained by Brongniart.

After the expansion and impregnation of the stigma, the pollen-tubes may be traced in the conducting tissue of the style, but not so far as the exostome; however, in the channel leading to this point the pollenic granules are found in abundance, and are doubtless brought in contact with the outer surface of the embryo-sac, through the exostome and the minute canal in the apex of the nucleus. As at this period the first trace of the embryo appears in the form of the spherical body at the inferior extremity of the primary utricle, which has now assumed the character of the suspensor, I am induced to consider the origin of this body as resulting from a peculiar process of nutrition, determined by the material or dynamic influence of the fovilla, conveyed through the medium of the primary utricle or suspensor; and, as it is through this organ that the embryo appears to derive its nourishment during the period of its developement, we should, from this function, as well as from its anatomical relations, consider the suspensor, as the true umbilical cord; and transfer to it the name of *funiculus* from that medium of connexion between the ovule and columella, which has erroneously been viewed as the umbilical cord: to this however I would apply the name of *podosperm*, as denoting its relation to the ovule. As it is necessary that an umbilical cord should be organically united with the embryo, the impropriety of considering the organ described by Malpighi as the "*vas umbilicale*" in that light, will become sufficiently obvious. This structure consists of a minute cellular process extending from the base of the embryo-sac to the base of the nucleus, and has been found chiefly in the Cucurbitaceæ and Rosaceæ. It appears, however, to

be but a mere appendage of the embryo-sac, from which it takes its origin, and often never reaches the base of the nucleus, and cannot therefore be the medium of nutrition even to the embryo-sac. To this organ, therefore, it would be better to confine the name given to it by Dutrochet, that of the *hypostate*, as pointing out merely its anatomical relations.

The cellular process, I have described above as proceeding from the extremity of the suspensor (umbilicus) next the exostome, around the outer surface of the ovule, into the carpellary cavity, is an organ of unusual occurrence; and, as far as I am aware, its functions have never been noticed. From its mode of growth and structural relations it must be of very essential importance to the origin and developement of the embryo. It has recently been pointed out by F. G. F, Meyen * that in the great majority of instances, the pollen-tube, after having penetrated the exostome is brought in contact with the apex of the embryo-sac, with which it there contracts an adhesion: from this period the changes consequent on impregnation date their commencement, and under the direct influence of this immediate application of the fovilla to the embryo-sac, continue with uninterrupted regularity. But in the case of Tropæcolum Majus, as the pollen-tubes never reach the embryo-sac, some additional means are required to ensure such a *continuance* of the action of the fovilla on the primary utricle, as is necessary for the developement, at its extremity, of the spherical cellular body, which subsequently becomes the embryo. This action then, I believe to be effected by the projection of this cellular process from the primary utricle: which by being immersed (so to speak) in the fovilla, is made the medium for the transmission of the latter to the primary utricle, and, through it, to the embryo itself: for which office the structure of its extremity (so like the spongiole of a root) renders it peculiarly fitted. But if not concerned in the impregnation, it must at least be so in the nutrition of the embryo; and since the chalaza is the medium of nutrition only to the nucleus and its membranes, it is easy to shew how erroneously vegetable physiologists have viewed it as the true organic placenta, the functions of which may with justice be ascribed to the structure I have pointed out; which, like the placenta in the animal kingdom, communicates with the embryo by means of a true umbilical cord.

I have noticed, in the preceding observations, that the first appearance of the cotyledons is accompanied by a corresponding elongation of the axis of the embryo, owing to an extension of its globular cells: so that the

* Meyen, Observations sur la Fecondation des Végétaux Anu des Scien. Nat. Avril 1841.

cotyledons necessarily arise from the axis of the embryo. Hence the opinion held by many morphological writers that "the axis results from a union of the cotyledons, or of their petioles," is proved to be without foundation; for the foregoing observations shew that the lateral projections, which constitute the first traces of the cotyledons are composed of cellular tissue developed on opposite sides of the axis of the embryo; and are therefore new formations, arising from determinate points, and deriving their nourishment from the substance of the axis.

APPENDIX.

APPENDIX.

1.

Extract from a letter on the Sickness at Kotra in Upper Sinde, addressed to the Superintending Surgeon, from W. T. Babington, Esq.

Presented by the Medical Board, May, 1842.

In January, 1841, I arrived at Kotra with the left wing 1st Light Cavalry (Lancers), and from that date until April, little or no sickness had occurred; about the latter end of this month, or the commencement of the hot season, a fever of a bilious remittent character broke out amongst the troops, attacking both Europeans and natives, which, if treated at an early stage, was easily subdued by the administration of purgatives, followed by tonics, such as arsenic, quinine, steel, &c. according to the state of the patient; but in consequence of the excessive heat of the place, patients were a very long time recovering from the debility caused by a few repeated attacks. It was not by any means of a fatal kind, only two or three casualties having occurred amongst the men of the wing under my charge, and even in these, organic disease had previously existed.

The deaths that took place to so lamentable an extent, were sudden and solely attributable to the hot wind which prevailed so severely during the months of June and July, that those exposing themselves to it during the day, were generally brought into Hospital either dead, or died in ten minutes after, presenting the symptoms of apoplexy; every treatment was adopted that I thought could be beneficial, such as bleeding, both general and local, the administration of catharties and stimulating injections, the application of sinapisms to the feet, and in fact every remedy likely to lessen the accumulation of blood to the head, but death occurred so suddenly as not to allow time for the action of medicine.

In conclusion, I beg leave to state that I made every inquiry from the natives of the place, who suffered equally with ourselves, and who stated that even they themselves left the place during this most trying time of the year, nor could I learn that the present season had in any way been worse than former ones.

2.

Table, shewing the comparative Means and Extremes of Rain-fall and Temperature, at Malcolm Peth, Paunchgunnee, Bombay, and Poona, during the Rainy Season of 1842. By J. Murray, Esq.

Presented by the Medical Board.

Months.	Amount of Rain.				No. of fair days.				Greatest daily fall of Rain.				Mean Temperatnre.				Mean daily variation of Temperature.			
	Malcolm Peth.	Paunchgunnee.	Bombay.	Poona.	Malcolm Peth.	Paunchgunnee.	Bombay.	Poona.	Malcolm Peth.	Paunchgunnee.	Bombay.	Poona.	Malcolm Peth.	Paunchgunnee.	Bombay.	Poona.	Malcolm Peth.	Paunchgunnee.	Bombay.	Poona.
1842	I. c.	I. c	I. c.	I. c.					I. c.	I. c.	I. c.	I. c.	° ′	° ′	° ′		° ′	° ′	° ′	
June	37 86	4 48	17 26	1 39½	2	14	5	23	6 10	1 42	6 0	0 28	65 8	70 3	85 2		4 7	7 7	4 1	
July	117 76	24 93	23 06	5 94	0	3	3	15	12 74	3 61	11 0	1 42	63 2	68 0	82 9		4 9	3 9	3 5	
August	77 75	12 24	37 16	3 8½	0	3	0	15	9 87	1 78	6 0	0 79	63 1	67 0	81 2		3 4	4 3	4 8	
September	56 00	7 05	9 85	4 30½	1	3	6	13	7 32	0 61	3 0	1 45	65 5	68 8	81 2		6 0	5 9	4 6	
Total Monsoon	289 37	48 67	87 33	14 77½	3	23	14	66	12 74	3 61	11 0	1 45	64 4	68 5	82 6		4 7	5 4	4 2	

Note by the Secretary. A Table analogous to this, but having reference to the monsoon of 1835, will be found at page 213, of the 3rd number of the Society's Transactions. It will be useful to compare these tables, and also others that may be drawn up from future observations. — The difference between the existing tables regards the relative amount of rain fall at Paunchgunnee. In 1835, Malcolm Peth 196 inches; Paunchgunnee, 50 inches; Bombay, 55, inches. — In 1842 Malcolm Peth 289 inches; Paunchgunnee 48 inches; Bombay 87 inches: fractions are omitted.

3

Annual Return of Patients in the Lunatic Asylum, Bombay; from the 1*st January to the* 31*st December* 1841. By W. B. Barrington, Esq.

Presented by the Medical Board.

	Remaining on the 31st December 1840.	Admitted.	Total.	Discharged.	Died.	Embarked to Europe.	Deserted.	Remained.
January	37	7	44	6	2	"	"	36
February	36	11	47	5	"	2	"	40
March	40	10	50	9	1	"	"	40
April	40	9	49	11	"	"	"	38
May	38	3	41	6	"	"	"	35
June	35	9	44	9	"	"	1	34
July	34	5	39	4	"	"	"	35
August	35	7	42	4	1	"	"	37
September	37	7	44	4	"	"	"	40
October	40	9	49	8	1	"	"	40
November	40	5	45	5	"	"	"	40
December	40	14	54	8	2	"	"	44
Total		96		79	7	2	1	

Tabular Statement of the admissions and deaths for the last seven years from 1834.

Years.	Admitted.	Died.
1835	52	10
1836	43	8
1837	63	5
1838	60	11
1839	57	3
1840	80	8
1841	96	7

In addition to the tabular statement for the past year, I subjoin a statement of the admissions and deaths of the six preceding years, by which it will appear that the numbers admitted have increased nearly one hundred per cent since 1835, whilst the deaths in this increased number are numerically less. I have endeavoured repeatedly to ascertain the cause of this increase, but from the fact of the patient being almost invariably sent by the Magistrate of Police without any reference either to the family, occupation or habits, of the individual, I have scarcely ever been enabled to discover it: in some instances it has been traced to intemperance. The diminution in the mortality may be attributed to improvements in the wards, the greater facility of sea-bathing, since the formation of the bath, and more particularly the constant employment in the garden and other occupation suited to individual patients as well as various amusements in which some of them experience much pleasure.

Restraint has been, as much as possible, done away with, and every patient is kept in the open air nearly the entire day, except there is some particular cause or reason for his confinement. The friends of patients have always been allowed to remove them, even when not improved, and to this may in some degree be attributed the great increase of admissions lately, and not to a real increase of insanity: patients discharged in this manner are reported to the Medical Board as delivered over to their friends.

Colaba, 1st February, 1842.

4.

The late Assistant Surgeon John Fraser Heddle.

Since the publication of the last number of the Transactions, the Society has experienced the loss of the much valued associate whose name is prefixed to this paragraph.

Endowed with high proficiency in his immediate profession, Mr. Heddle also possessed extensive and well arranged information in History, Geography, Chemistry, Botany, Geology, and other branches of Natural History;—and these great and varied acquirements, always applied with an admirable spirit of philanthropy to increase the comforts and advance the happiness of mankind, were borne by this true lover of science with a humility so sincere and unaffected, that it was only in the unguarded moments of friendly intercourse, that the full measure of his knowledge and the perfect unselfishness of his disposition were allowed to become apparent even to those who enjoyed the privilege of his private friendship.

Though the only contribution made by Mr. Heddle to the Transactions of the Medical and Physical Society, titled "A* selection of cases of violent death which have formed the subjects of investigation before the Coroner of Bombay," is an excellent and practical paper, it conveys a very inadequate idea of the extent of the Society's obligations; — and the Secretary would ill discharge a duty due to the memory of his much esteemed friend, and to the Society,—did he not gladly avail himself of this opportunity of recording in these pages (what is unknown to others,) that by numerous acts of cheerful and unobtrusive co-operation, and by advice always practical and judicious and ever ready when solicited, Mr. Heddle's influence on the proceedings of this Society was not unimportant and is now the subject of grateful and pleasing recollection.

It was, however, as Secretary to the Geographical Society of Bombay and to the Agri-Horticultural Society of Western India, that Mr. Heddle enjoyed the fullest scope for the exercise of his talents; and these Societies, in a spirit of just admiration, are engaged in erecting a suitable monument commemorative of the rare endowments and the high-minded integrity which adorned their late Secretary and reflected honor upon them.

Such is the public testimony which has been borne to a life of usefulness and worth, cut short at the outset of a career of high promise;—nor have the private friends of this lamented individual been slow to testify their sympathy for his estimable qualities, and his early fall, by erecting a monumental obelisk on that spot of the Mahabuleshwar Hills where the remains of their departed friend repose.

Mr. Heddle arrived in Bombay, on the 6th December 1829, and died at Mahabuleshwar on the 6th March 1842. At different periods of his service he filled with marked credit the appointments of Assistant Garrison Surgeon and Deputy Medical Store-keeper at the Presidency; Store-keeper of the European General Hospital and Surgeon to the Coroner; Vaccinator and in Medical charge of the Police Corps. Latterly Mr. Heddle officiated as Deputy Assay Master and Acting Assay Master in the Mint, in which office he justly earned the confidence of the Government, and of that part of the community having transactions with that establishment.

* 1st Number of Transactions.

QUARTERLY PROCEEDINGS

OF THE

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

COMMITTEE OF MANAGEMENT FOR 1842.

President.

J. McADAM, ESQ.

Members.

R. H. KENNEDY, M. D. — J. McLENNAN, ESQ.
J. GLEN, ESQ. — J. BURNES, K. H.

Secretary for 1842 *and* 1843.

C. MOREHEAD, M. D.

Proceedings from 1*st October to* 31*st December*, 1841.

MEMBERS ELECTED.

Ordinary.

E. Sabbin, Esq., and G. J. McKenzie, Esq., Assistant Surgeons, Bombay Establishment; elected in accordance with Regulation No. 7.

Communications Presented.

1. A letter from the Royal College of Surgeons in London, acknowledging the 3d Number of the Society's Transactions.
2. A letter from Sir George Ballingall, thanking the Society for having elected him a Corresponding Member.
3. A letter from Government in the General Department, requesting a copy of the Society's Proceedings for transmission to the Honorable Court of Directors.
4. A letter from James Laidlaw, Esq., of Alexandria, acknowledging the receipt of the Numbers of the Society's Transactions.

5. Report of the Medical Statistics of Quetta; by A. H. Leith, Esq.; presented by the Medical Board.

6. Notes on the Climate, &c. of Dadur, by A. Deas, Esq.; presented by the Medical Board.

7. A Case of Hydrophobia ; presented by the Medical Board.

8. An Obscure Case of Phthisis Pulmonalis, by J. D. Cambpell, Esq ; presented by the Medical Board.

Proceedings from 1*st January to* 31 *March*, 1842.

MEMBERS ELECTED.

Ordinary.

D. A. Carnegie, Esq., Assistant Surgeon, and B. A. Bremner, Esq., Surgeon, in Bombay.

E. Mahaffy, Esq.; W. Braikenridge, Esq.; John Miller, Esq.; H. J. Carter, Esq.; W. R. Dimock, Esq.; James Vaughan, Esq., and C. J Weston, Esq. Assistant Surgeons, Bombay Establishment ; elected in accordance with Regulation No. 7.

Communications Presented.

1. A letter from the Medical Society of Madras, returning thanks for the copy of No. IV of the Society's Transactions presented to them.

2. Report on the Fever prevailing at Bancoot, by T. Waller, Esq.; presented by the Medical Board.

3. A Case of successful excision of the Elbow-joint, performed on board H. M.'s S. Dreadnought, by Surgeon C. Bush ; presented by J. D. Campbell, Esquire.

4. Case of the late Major ——, by A. Duncan, Esq.; presented by the Medical Board.

5. Meteorological Observations at the Convalescent Station on the Mahabuleshwar Hills, for the months of November and December, 1841, and January, 1842, by J. Murray, Esq.; presented by the Medical Board.

Proceedings from 1*st June, to* 30*th April* 1842.

MEMBERS ELECTED.

Ordinary.

W. Campbell, Esq.; T. J. Young, Esq.; G. G. W. Maitland, Esq.; and J. Peet, Esq.; Assistant Surgeons, Bombay Establishment, elected in accordance with Regulation No. 7.

Communications Presented.

1. Annual Report of the 2nd Battalion of Artillery for the year 1841 ; by T. Robson, Esq.; presented by the Medical Board.

2. Annual Report of the Native General Hospital for the year 1841, by A. Graham, Esq.; presented by the Medical Board.

3. Annual Return of Patients in the Lunatic Asylum, from 1st January to the 31st December 1841 : by W. B. Barrington, Esq.; presented by the Medical Board.

4. Annual Report of the Civil Surgeon of Ahmedabad for the year 1841 ; by S. Sproule, Esq.; presented by the Medical Board.

5. Observations on the Iodide of Iron ; by D. Grierson, Esq.; presented by the Medical Board.

6. Annual Report of the 1st Troop Horse Artillery for the year 1841 ; by A. H. Leith, Esq ; presented by the Medical Board.

7. Annual Report of the 26th Regiment, N. I. for the year 1841 ; by A. Wright, Esq. ; presented by the Medical Board.

8. A Case of Tetanus ; by G. M. Seaward, Esq ; presented by the Medical Board.

9. Report on the Diseases which have occurred in the Honorable Company's Steam Flotilla on the river Euphrates, for the year ending the 31st of December 1841, together with an account of the Climate and Medical Topography of the country ; by J. Floyd, Esq.; presented by the Medical Board.

10. A letter from W. T. Babington, Esq ; to the address of the Superintending Surgeon, regarding the sickness at Kotra; presented by the Medical Board.

Proceedings from 1st July to 30th September, 1842.

MEMBERS ELECTED.

Ordinary.

A. S. Thomson, Esq , Assistant Surgeon, H. M.'s 14th Lt Dragoons.

S. E. Trestrail, Esq.; M. Style, Esq.; F. Richardson, Esq.; W. J. Stuart, Esq ; and J. Russell, Esq., Assistant Surgeons, Bombay Establishment, elected in accordance with Regulation, No. 7.

Communications Presented.

1. A letter from W. Watkins, Esq. requesting that his name may be withdrawn from the list of members.

2. A letter from H. Franklin, Esq., Deputy Inspector General of Hospitals, Bombay, acknowledging the receipt of the four published volumes of the Society's Transactions presented to him.

3 Annual Medical Report of Her Majesty's 2d or Queen's Royal Regiment, from the 1st of April 1841, to the 31st of March 1842 ; by R. H. A. Hunter, Esq.

4. History of the Epidemic Fever which prevailed among the men of Her Majesty's 17th Regiment, during the monsoon of 1841, when quartered in the Colaba Barracks, Bombay ; by A. S. Thomson, Esq., M. D. Assistant Surgeon, 14th Light Dragoons, lately H. M.'s 17th foot.

5. Register of the Pluviometer at Bombay for the months of June and July 1842, presented by G. Noton, Esq.

COMMITTEE OF MANAGEMENT FOR 1843.

President.

R. H. KENNEDY, M. D.

Members.

J. GLEN, ESQ. J. G. MALCOLMSON, ESQ.
J. McLENNAN, ESQ. J. BURNES, K. H.

Secretary.

C. MOREHEAD, M. D.

Proceedings from 1st October, to 31st December, 1842.

MEMBERS ELECTED.

Ordinary.

J. W. Moffat, Esq. Surgeon, Her Majesty's 14th Light Dragoons.

Communications Presented.

1. Statistical Reports prepared by the Medical Officers serving in Scinde with the Force under the Command of Brigadier England ; presented by the Medical Board.
2. Remarks on the Practice of Transfusion and its application in the treatment of Hæmorrhage, &c. deduced chiefly from recorded cases ; by John Peet, Esq.
3. Medico-Historical Abstract of the first year's Service in the East Indies, of H. M.'s 14th Regiment of Light Dragoons at Kirkee under the Bombay Presidency ; by J. W. Moffat, Esq. Surgeon, H. M.'s 14th Light Dragoons.
4. Register of the Pluviometer at Bombay for the months of September and October 1842, presented by G. Noton, Esq.

The following Proceedings of the Committee are recorded and published for the information of the Society.

Bombay, 26th December, 1842.

Sir, — I am directed by the Committee of the Medical and Physical Society to transmit for your information the annexed copy of a Resolution which has been recorded in the Society's Proceedings, and to express a hope that the proposition therein made will meet with your concurrence.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) C. MOREHEAD,
Secretary.

To
R. H. A. HUNTER, ESQ.
Staff Surgeon.

Staff Surgeon R. H. A. Hunter, lately Assistant Surgeon in the 2d or Queen's Royal Regiment, being about to leave India for England, It is resolved — That in testimony of the just sense entertained by the Medical and Physical Society, of the obligations which Dr. Hunter has conferred by contributing the many excellent papers which have been published in the several Numbers of the Society's Transactions, — that Gentleman be requested to permit, on his departure from India, his name to be transferred from the list of Ordinary to that of Corresponding Members.

2. That the above Resolution be recorded in the Quarterly Proceedings and in the next number of the Society's Transactions.

Bombay, 24th December, 1842. (Signed) C. MOREHEAD, *Secretary.*

Bombay, 27th December, 1842.

Sir, — I have the honor to acknowledge your letter of the 25th instant, conveying a copy of a Resolution which has been recorded in the Society's Proceedings in my favor, and expressing a hope, that the proposition therein made might meet with my concurrence.

In reply permit me to asure the Committee of the Medical and Physical Society, that I feel highly gratified by this mark of their approbation, and express not only a ready concurrence but also my best thanks for their very flattering proposition, and to say it is an honor, however unmerited, I shall ever feel proud of and cherish.

I have the honor to be
Sir,
Your most obedient Servant,
(Signed) R. H. A. HUNTER,
Staff Surgeon.

To
C. MOREHEAD, ESQ.
Secretary Medical and Physical Society, Bombay.

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

Circular.

1. The Committee adverting to the large sum (Rs. 773) of accumulated arrears due by Subscribers, beg to direct attention to the Regulations of the Society relative to the payment of Subscriptions, viz.

8. "Ordinary Members to pay a fee of *five* Rupees on Election, and to contribute *twelve* Rupees annually, payable in *advance*.

9. "No member absent from India, shall be chargeable with his contribution for the period of his absence.

10. "Any Member neglecting to pay his annual contribution for two years, shall be considered to have withdrawn from the Society, and his name will be erased from the list of Members."

2. The Committee consider it unnessary to do more than to point to these Regulations, for it must be evident that by neglecting to observe them the operations of the Society are impeded in many ways.

3. To those Members, however, whose arrears exceed two years Subscription, and to whom Regulation 10 is applicable, the Committee take this opportunity of intimating that should their Subscriptions not be paid up, before the 1st July next, the erasure of their names from the list of members will be recorded in the Quarterly Proceedings which fall to be published in that month.

C. MOREHEAD,

Secretary Medical and Physical Society.

Bombay, 23d January, 1843.

LIST OF DONATIONS FOR THE LIBRARY.

By the Editor.

Madras Quarterly Medical Journal, No. III and IV.

By the Authors.

1. Outlines of Military Surgery, by Sir G. Ballingall.

2. An Examination of Reviews contained in the British and Foreign Medical Review and the Medical Chirurgical Review of the Medical and Physiological Commentaries, by M. Paine, M. D.

3. Cuvierian Natural History Society. An account of Artesian Wells, by E. T. Kelaart, Esq.

4. A Treatise on the formation, constituents and extraction of the Urinary Calculus, by J. G. Crosse, M. D., F. R. S.

5. A Discourse introductory to a course of Lectures on the Institutes of Medicine and Materia Medica; delivered before the medical class of the University of New York, at the session for 1841-42, by M. Paine, A. M., M. D., Professor, &c.

6. Dr. Paine's Answer to Circular Letters by Drs. Carpenter and Forbes, from the "Boston Medical and Surgical Journal."

By the Asiatic Society of Bombay.

Journal of the Bombay Branch Royal Asiatic Society, Nos. II. and III.

By E. F. Kelaart, Esq., M. R., C. S. L.

Testimonials in favour of John Hutton Balfour, M. D. Ed. F. R. S.

By M. L. Bouton, Esq., Secretary to the Society of Natural History in Mauritius.

A Copy of the Annual Report of the Society of Natural History in Mauritius.

By the Medical Board of Bombay.

1. The influence of Tropical Climates on European Constitutions ; by J. Johnson, M. D. and J. R. Martin, Esq.

2. Researches into the causes, nature and treatment, of the more prevalent Diseases of India and of warm Climates generally : 2d edition ; by J. Annesly, F. R. S., F. S. A,

3. Report on the Malignant Fever, called the Pali Plague, by J. Rankin, M. D. 1838.

4. Sketch of the Topography and Statistics of Dacca ; by James Taylor, Esq. 1849.

5. Outline of the Topography and Statistics of the Southern Districts of Oudh; by Donald Butler, M. D. 1839.

6. Notes on the Medical Topography of Calcutta, by J. R. Martin, Esq. 1837.

7. Notes on the Medical Topography of the District of Sarun, by R. Rankin, Esq. 1839.

8. Topography of Meerut and the principal Diseases which prevailed in the 1st Brigade of Horse Artillery at that place ; by J. Murray, M. D. 1839.

9. Topography of Assam ; by J. M'Cosh, Esq. 1837.

10. A General View of the present state of Lunatics and Lunatic Asylums in Great Britain and Ireland, and in some other kingdoms ; by Sir A. Halliday, M. D. and K. H. 1838.

11. General and Medical Topography of Kalee Kemaoon and Shore Valley ; by W. Dollard, Esq. 1840.

12. Sketch of the Medical Topography of Bistmath ; by D. A. Macleod, Esq. 1837.

13. Description of the new process of perforating and destroying the Stone in the Bladder ; by J. Atkinson, Esq. 1831.

14. Investigation of cases of poisoning ; by W. B. O'Shaughnessy, M. D.

15. Report on the Epidemic Cholera as it has appeared in the Territories subject to the Presidency of Fort St. George ; by W. Scott, Esq. 1824.

16. Cholera with original Views on Fever, &c.; by C. Searle, Esq. 1830.

17. Sketches of the Medical Topography of the Mediterranean, comprising an account of Gibraltar, the Ionian islands, and Malta ; by J. Hennen, M. D. F. R. S. E. 1830.

18. Hints to young Medical Officers of the Army on the examination of Recruits and respecting the feigned disabilities of Soldiers ; with official documents and the regulations for the inspection of conscripts for the French and Prussian Armies ; by H. Marshall, Esq. 1828.

19. A Report on the Medical Management of the Native Jails throughout the Territories subject to the Government of Fort William and Agra ; by J. Hutchinson, Esq. 1835.

20. Table and Reports on Diseases, &c.; published by the Medical Board of Madras, 1828.

21. Some Account of the General and Medical Topography of Ajmeer, by R. H. Irvine M. D. 1841.

By the Medical and Physical Society of Calcutta.

Transactions of the Medical and Physical Society of Calcutta, Vol. VIII. part 2.

LIST OF MEMBERS

OF THE

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

ORDINARY MEMBERS BOMBAY PRESIDENCY.

The asterisk (*) marks those members who are absent on furlough or sick leave.

Allender, G., M. D., *Assistant Surgeon.*
Arbuckle, W., M. D., *Assistant Surgeon.*
Arnott, A., M. D., *Surgeon.*
Arnott, F. S., M. D., *Assistant Surgeon.*
Atkinson, J. J., Esq., *Assistant Surgeon.*

Babington, W. F., Esq., *Assistant Surgeon.*
Barrington, W. B., Esq., *Assistant Surgeon.*
Batho, J. E., Esq., *Assistant Surgeon.*
* Behan, R. J., Esq., *Assistant Surgeon.*
Bell, D. C., Esq., *Superintending Surgeon.*
Black, C., M. D., *Assistant Surgeon.*
Bowie, W., M. D., *Assistant Surgeon.*
Boyd, J., Esq., *Surgeon.*
Boyrenson, F. A., M. D., *Assistant Surgeon.*
Braikenridge, W., Esq., *Assistant Surgeon.*
Bremner, B. A., M. D., *Surgeon in Bombay.*
Brown, R., M. D., *Surgeon.*
Burn, A., M. D., *Assistant Surgeon.*
Burnes, J., K. H., M. D., *Surgeon.*

Cahill, F. S., M. D., *Surgeon.*
Cannan, T., Esq. *Assistant Surgeon.*
Cameron, W. C., Esq., *Assistant Surgeon.*
Campbell, J. D., Esq., *Assistant Surgeon.*
Campbell, W. Esq., *Assistant Surgeon.*
Carnegie, D. A., M. D., *Assistant Surgeon.*
Carter, J. H., Esq , *Assistant Surgeon.*
Carter, H. J., Esq., *Assistant Surgeon.*
Collier, C. T., Esq., *Surgeon.*
Collum, W., Esq., *Assistant Surgeon.*
Craig, J., Esq., *Assistant Surgeon.*
Cramond, J., Esq., *Assistant Surgeon.*
Cruickshank, P., Esq., *Assistant Surgeon.*

Davidson, R. H., M. D., *Assistant Surgeon.*
Demock, W. R., Esq., *Assistant Surgeon.*
Dent, R., Esq., *Assistant Surgeon.*
Dickinson, G. H., Esq., *Assistant Surgeon.*
Doig, J., Esq., *Surgeon.*
Don, J., M. D., *Surgeon.*
Duncan, A., Esq., *Surgeon.*

Elliott, H. R., Esq., *Assistant Surgeon.*
Ellis, E., Esq., *Assistant Surgeon.*

Faithful, J. J., Esq., *Assistant Surgeon.*
Fogerty, W. K., Esq., *Surgeon in Bombay.*
Forbes, G. F., Esq., *Assistant Surgeon.*
* Fraser, J., Esq., *Assistant Surgeon.*
Frith, R., M. D., *Surgeon.*

* Gibb, H., Esq., *Surgeon.*
Gibson, A., Esq. *Surgeon.*
Gillanders, W. P., Esq., *Assistant Surgeon.*
* Glen, J., Esq., *Superintending Surgeon.*
* Gray, P., Esq., *Assistant Surgeon.*
Graham, A., Esq., *Surgeon.*

Hamilton, J. J., Esq., *Surgeon.*
Hathorn, H. P., Esq., *Surgeon.*
Hudson, H., Esq., *Assistant Surgeon.*

Impey, E., Esq., *Assistant Surgeon.*
* Inglis, J., M. D., *Surgeon.*
* Johnstone, H., Esq., *Surgeon.*

Kays, M. T., M. D., *Surgeon.*
Keith, J., Esq , *Assistant Surgeon.*
Kennedy, R. H., M. D., *Physician General.*
Kirk, R., Esq., *Assistant Surgeon.*

Larkins, T. B., Esq., *Assistant Surgeon.*
Leith, A. H., Esq., *Assistant Surgeon.*
Lowry, J. M., M. D., *Assistant Surgeon.*
Lodwick, T., Esq., *Assistant Surgeon.*
Lush, C., M. D., *Surgeon.*

Mackie, W., Esq., *Surgeon in Bombay.*
Mahaffy, E , M. D., *Assistant Surgeon.*
Maitland, G. P. W. Esq., *Assistant Surgeon.*
Malcolmson, J. P., Esq., *Assistant Surgeon.*
Manisty, T., Esq., *Assistant Surgeon.*
* McKenzie, T., Esq., *Assistant Surgeon.*

McKenzie, J., Esq., *Assistant Surgeon.*
McKenzie, G. J., Esq., *Assistant Surgeon.*
McLennan, J., Esq., *Surgeon.*
* McMorris, J., Esq., *Surgeon.*
Miller. J. C., Esq. *Assistant Surgeon.*
Milligan, S. D., Esq , *Assistant Surgeon*
Moffat, J. W., Esq., *Surgeon H. MS.*
* Montgomery, A., Esq., *Surgeon.*
Moore, H. S., Esq., *Assistant Surgeon.*
Morier, J. P., Esq., *Assistant Surgeon.*
Morehead, C., M. D., *Assistant Surgeon.*
Murray, J., Esq., *Surgeon.*

Neilson, W., M. D., *Assistant Surgeon.*
Nicolson, W., A. R., Esq., *Assistant Surgeon.*

Ogilvie, G. M., M. D., *Assistant Surgeon.*
Owen, R. B., M. D., *Surgeon.*

* Patch, J., Esq., *Surgeon.*
Peart, J. H., Esq., *Assistant Surgeon.*
Peele, R. D. C., Esq., *Assistant Surgeon.*
Pelly, S. M., Esq., *Assistant Surgeon.*
Peet, J., Esq., *Assistant Surgeon.*
Pigou, W. H., Esq., *Assistant Surgeon.*
Pitcairn, W., Esq., *Assistant Surgeon.*

* Ranclaud, M. A., Esq., *Assistant Surgeon.*
Richardson, F. Esq., *Assistant Surgeon.*
Ritchie, D. M. D., *Assistant Surgeon.*
Rooke, B. P., Esq., *Surgeon.*
Ross, J., Esq., *Surgeon.*
Russell, R. J., Esq., *Assistant Surgeon.*
Sabben, E., Esq., *Assistant Surgeon.*
Scott, J., Esq., *Surgeon.*
Seaward, G. M. S., Esq., *Assistant Surgeon.*
Shaw, G. J., M. D., *Assistant Surgeon.*
Smith, R. R., Esq. *Assistant Surgeon.*
Sproule, J., M. D., *Assistant Surgeon.*
Sproule, J. S., M. D., *Assistant Surgeon.*
Stewart, J., M. D., *Surgeon.*
Stuart, W. J., Esq., *Assistant Surgeon.*
Style, M., Esq., *Assistant Surgeon.*

Tawse, A., Esq., *Surgeon.*
Taylor, W. B., Esq., *Surgeon.*
Thom, W., Esq., *Assistant Surgeon.*
Thompson, M., Esq., *Assistant Surgeon.*
Thomson, A. S., Esq., *Asst. Surgeon H. MS.*
Trestrail, J. E., Esq., *Assistant Surgeon.*

Vaughan, J., Esq., *Assistant Surgeon.*

Walker, A., M. D., *Assistant Surgeon.*
Wallace, E. J., Esq. *Assistant Surgeon.*
Waller, T., Esq., *Assistant Surgeon.*
Ward, T. W., Esq. *Assistant Surgeon.*
Weston, C. J., Esq., *Assistant Surgeon.*
Wight, R., Esq., *Surgeon.*
Winchester, J. W., Esq., *Assistant Surgeon.*
Woosnam, R., Esq., *Assistant Surgeon.*
Wright, A., Esq., *Assistant Surgeon.*

Young, F. J., Esq., *Assistant Surgeon.*

W. B. O'Shaughnessy, Esq., *Professor of Chemistry, Medical College, Calcutta.*
J. P. Jackson, Esq., *Bengal Establishment.*
H. S. Fleming, Esq., *Surgeon, Madras Establishment.*
W. Middlemas, Esq., *Assistant Surgeon, Madras Establishment.*
A. Anderson, Esq., *Acting Surgeon to H. B. Majesty's Superintendent in China.*
J. G. Malcomson, Esq., *Formerly Surgeon, Madras Establishment.*

CORRESPONDING MEMBERS.

J. S. Law, Esq., *B. C. S.*
Captain Shortrede, *Superintendent of the Trigonometrical Survey.*
Dr. Pruner, *Chief Physician to the Military Hospital and Professor in the Medical College at Cairo.*
M. M. J. Desjardin, Esq., *Secretary to the Society of Natural History in Mauritius.*
Sir George Ballingall, *Professor of Military Surgery, Edinburgh.*
Dr. Laidlaw, *Alexandria.*
R. H. A. Hunter, Esq., *Staff Surgeon H. M.'s Service.*

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—— II. — Observations on the Climate of the Mahabuleshwur Hills. By J. Murray Esq., Surgeon of the Convalescent Station.

—— III. — A Report on a Disease which prevailed in Kattywar and in parts of the Zillah of Ahmedabad, in the years 1819 and 1820; addressed to the Secretary of the Medical Board. By Thomas Whyte, Esq., formerly of the Bombay Service.

—— IV. — A Report on a Disease which prevailed in part of Kutch and Kattywar, in the year 1815 and 1816; Addressed to the Secretary of the Medical Board. By J. McAdam, Esq., Superintending Surgeon Deccan Division, formerly Civil Surgeon in Kattywar.

—— V. — A Report on a Disease which prevailed in part of the Zillah of Ahmedabad in the years 1817, 1818 and 1819; addressed to the Secretary of the Medical Board. By J. Gilder, Esq., formerly of the Bombay Service.

—— VI. — A Few remarks on the Diseases in the Hospital of the 3rd Troop of the Horse Artillery at Deesa, during the months of August, September, October, November, and December 1834. By R. Brown, M. D. Assistant Surgeon, European General Hospital.

—— VII. — Observations on Dracunculus, extracted from the half yearly reports of the Diseases prevailing at Dharwar in the 1st Grenadier Regiment, in the year 1836. By D. Forbes, Esq., Surgeon.

—— VIII. — Historical Report of His Majesty's 2d or Queen's Royal Regiment for the year 1836. By R. H. A. Hunter, Esq., Assistant Surgeon. H. M.'s 2d Regiment

—— IX. — Cases of Cardiac Disease and of Tubercular Phthisis occurring in His Majesty's 2d or Queen's Royal Regiment. By R. H. A Hunter, Esq., Assistant Surgeon, H. M.'s 2d Regiment.

—— X. — A Few Notes on the Thermal Springs in the Konkan. By A. Duncan, Esq., Surgeon.

—— XI — Practical Surgical Cases. By W. B. Barrington, Esq., Civil Surgeon, Broach.

—— XII. — Notes on the state of Medical and Surgical Science in the countries bordering on the Indus. By P. Lord, M. B. in Medical Charge of the Cabool Mission.

—— XIII. — A Selection of cases of violent Deaths which have formed subjects of investigation before the Coroner of Bombay. By J. F. Heddle, Esq., Surgeon to the Coroner.

—— XIV. — A Letter on the manner of breeding Leeches practised in the Deccan ; addressed to the Secretary of the Society. By A. Gibson Esq , Vaccinator, Deccan Division

Appendix.

1. — Two cases of infantile Disease terminating fatally. By A. Duncan, Esq.

2. — Two cases of rapidly fatal cerebral inflammation, with obscure symtoms, complicated with croup-like cough. By J. Murray, Esq.

3. — Case of Poisoning by Bichloride of Mercury. Presented by J. Murray, Esq.

4. — Case of Poisoning by Opium. Presented by C. Morehead, Esq. M. D.

5. — A Case of Vascular Sarcoma and one of Femoral Aneurism. By C. F. Collier, Assistant Surgeon.

6. — Case of spontaneous evolution or doubling, which occurred after an arm presentation. By T. Waller, Esq.

7. — Urethral obstruction by a calculus in a child of three years of age. By A. Duncan, Esq.

8 — Observations on the use of " Meeta tale," or the oil of the Sesamum Orientale, in healing wounds. By A. Burn, M. D.

9 — Disease produced by the Anacardium Orientale, or Marking Nut. By A. Gibson, Esq.

10. — On the unhealthiness of some parts of Candeish at certain seasons. Presented by T. Williamson, Esq., Revenue Commissioner.

11. — Case of Ephidrosis Partialis. By A. Duncan, Esq.

12. — Case of Necrosis of the left radius. By J. P. Malcolmson, Esq.

13. — Case of sloughing and discharge of 25 inches of large intestine in Dysentery. By R. Brown, M. D.

14. — An Extract from Dr. Inglis' Report of the Diseases of the 22d Regiment, N. 1. for the first half year of 1836.

15. — General Abstracts of the returns of sick of the European and Native Troops belonging to the Presidency of Fort St. George, for the years 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834 and 1835. Presented by the Medical Board of Madras.

16. — Tabular View of the Meteorology of the Convalescent Station of the Mahabuleshwur Hills, for each month, from October 1st 1836 to September, 30th 1837. By J. Murray, Esq.

17. — Case of Dysentery with sloughing, and discharge of a portion of the intestinal canal.

18. — Case of Tetanus extracted from Dr. McLennan's report of the Presidency Native General Hospital, for the half year commencing on the 1st January, and terminating on the 1st July, 1835.

19. — Form of Meteorological Table, recommended by the Committee for general adoption.

20 — Proceedings connected with the establishment of the Medical and Physical Society of Bombay.

21. — Regulations of the Medical and Physical Society of Bombay.
22. — Monthly and Quarterly Proceedings of the Medical and Physical Society of Bombay.
23. — List of Donations for the Library.
24. — List of Members of the Medical and Physical Society of Bombay.

No. II.

Transactions for the years, 1838, 1839.

Art. I. — Report on the Disease at Pali, as observed in January and February, 1838. By F. Forbes, A. M. Assistant Surgeon.
—— II. — Annual Report of the Diseases of H. M.'s 2d or Queen's Royal Regiment, from the 1st of April 1837, to the 31st March, 1838. By R. H. A. Hunter, Assistant Surgeon, H. M.'s 2d Regiment.
—— III. — Medical Report on the Mahabuleshwur Convalescent Station for the season 1837—38. By J. Murray, Esq.
—— IV. — Annual Report of the Diseases in the European General Hospital of Bombay, from the 1st of January, to the 31st of December, 1838. By James Bird, Esq.
—— V. — Cases illustrative of the Pathology of the Diseases of Bombay. By C. Morehead, Esq., M. D. Part I.
—— VI. — Topographical and Statistical details of Ahmednuggur. By R. T. Barra, Esq. Surgeon 1st Battalion of Artillery, with a Geological notice of the surrounding country. By Lieut. Ash, Bombay Artillery.
—— VII. — Statement of some peculiar Symptoms supposed to have been induced by a Narcotic Poison. By D. C. Bell, Esq.
—— VIII. — Cases illustrative of the influence of Lunar Agency as an occasional cause of periodical exacerbations in various Chronic Diseases. By J. Murray. Esq.
—— IX. — Report on the Measles which prevailed epidemically in the Central Schools at Byculla, during the months of December 1338, January, February, and March 1839. By C. Morehead, M. D.
—— X. — A few remarks on the Vegetation, the People, and Diseases, of the Deccan. By A. Gibson, Esq.
—— XI. — Observations on the Climate of Sattara. By A. Young, Esq.
—— XII. — Cases of Cardiac Disease and Aneurism of the Aorta. By R. H. A. Hunter, Esq., H. M.'s 2d Regiment.
—— XIII. — Surgical cases. By W. B. C. Graham, Esq. Civil Surgeon, Rajcote.
—— XIV. — Case of Prolapsus Ani cured by actual cautery. By John Scott, Esq.
—— XV. — Notes on the treatment of Cholera with Acetate of Lead. By C. Morehead, M. D.
—— XVI. — Tabular View of the Meteorology of the Convalescent Station on the Mahableshwur Hills for each month, from October, 1st 1837 to September 30th 1838. By J. Murray, Esq.
—— XVII. — Tabular View of the Meteorology of the Convalescent Station on

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TRANSACTIONS

OF THE

MEDICAL AND PHYSICAL SOCIETY

OF

BOMBAY.

FOR THE YEAR M.DCCC.XLIII.

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1843.

No. VI.

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OF

BOMBAY.

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TRANSACTIONS

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OF

BOMBAY.

1843.

Article I.

Medical Report on the Kingdom of Shoa. By R. Kirk, Esq. Assistant Surgeon, attached to the Embassy to the Court of Shoa.

* Presented by the Medical Board, May, 1843.

The Kingdom of Shoa, included between the parallels of 8° 30′ and 10° 30′ north latitude, and meridians of 38° and 40° 20′ east longitude, may be divided for the purposes of medical topography into two districts, differing widely in elevation, in climate and productions, and consequently each marked by peculiarities of pathological character.

Bounded to the eastward by the desert wilderness of the Hawash, a parched inhospitable plain, thinly inhabited by nomadic tribes of the Adiel and Galla races, itself 2,500 feet above the level of the ocean, the territories of Southern Abyssinia, may be said to commence at the foot of the first series of hills, which gradually increasing in elevation and fertili-

* *Note by the Secretary.* This Report has subsequently been revised and corrected by the Author, and several explanatory notes have been added by him.

ty, at length reach the barrier of the extensive range, which running from north to south, forms the brink of the elevated table-land of Shoa.

The breadth of this lower district varies from ten to fifteen miles ; it is a land of hill and valley, abundantly irrigated by numerous rivers conveying the waters of the mountain range to the Hawash,—rapid and important torrents, when swollen by the periodical rains, which in the drier months dwindle to small clear streamlets flowing through broad pebbly beds, and becoming lost soon after reaching the thirsty plain below.

This tract, which includes the provinces of Efat, with Effrata, Gidem, Makhfood, Channo, Aden, Burhat, &c., is well wooded, and highly cultivated, yielding rich crops of Teyf (*Poa Abyssinica*), Marshela (*Holcus or Jawari*), cotton and safflower; whilst the lemon, the plantain, the capsicum, the aloe, the various acacias and camel-thorn, prove its claim to a tropical climate, resembling much that of the Deccan and the milder regions of Western India.

It is thickly inhabited by a mixed race, the Mahomedan far out-numbering the Christian population, consisting of the descendants of the Moslem invaders of the country, offsets from the Adel tribes, who have left their pastoral and wandering habits, and engaged in agricultural pursuits in this more settled realm, and converts from the purer faith of Abyssinia. There is little difference perceptible in the physical configuration of the male inhabitants, but the Islam female is at once recognized from the Amhara, by her slighter and more delicate form, her fairer complexion, her long and luxuriant hair, and the Arab expression of her face.

Leaving this lower region and ascending by one of the few passes, which pierce the lofty barrier to the westward, whose precipitous sides are clothed with dense forests of the cedar-like juniper, we reach the elevated table-land of Shoa, in height varying from 8 to 10,000 feet above the sea, and strikingly different from the tract below, in its climate, and the aspect and products of its soil.

The view now extends over a wide expanse of undulating country, gradually sloping towards the blue ranges of the *Salalla* Mooga and Galla mountains, which skirt the horizon to the westward, and abutting on the frontiers of Gojam and Damot, form the eastern boundary of the valley of the Abai, the earlier sources of the Blue Nile, towards which all the rivers draining this extensive plateau take their course, and leaving the elevated plain, fall into the deep and broad ravines by which the country is intersected.

These vast fissures, extending from one extremity of the kingdom to the other, have evidently been produced by some subterranean convulsion or from the contraction of the hardening superstratum, when this region was subsiding from the vast igneous operations from which it had its origin, whose great extent is shewn by the trachyte, basaltic and other volcanic formations, which form the prevailing geological character of the whole country; and whose influence is still felt in the frequent occurrence of slight earthquakes at Ankober and the neighbouring districts. The decomposition of these rocks slowly proceeding for ages, has produced a deep stratum of rich, dark, soil, which liberally watered by the copious and periodical rains, and blessed with a genial climate, produces, with but little aid from man in its cultivation, a plentiful supply of all the necessaries of life, and affords a boundless and rich pasturage for his numerous herds and flocks.

The climate of this favoured region is exceedingly fine, possessing a pure and buoyant air; whilst the fierce heat of a tropical sun is tempered by the great elevation of the country. The nights are chilly, and in the colder months, though snow is here unknown, a thin sheet of ice is often found on the more sheltered pools, whilst a white hoar frost frequently greets the eye at day break; the thermometer in the shade seldom rising above 70° or 75° during the day.

During the warm season, the nights still continue cool, although the power of the sun's rays is often oppressively felt on exposure, but the slight shelter of an Abyssinian roof, is sufficient to moderate its heat, and afford even at this period, a temperate climate. For a month or two preceding the rainy season, which commences in June, strong easterly winds sweep over the country, their eddies forming whirlwinds, whose lofty columns laden with dust, fleet swiftly away, bearing off in their course the thatch from the houses and whatever light articles are caught within their vortex.

The rainy season is ushered in with violent storms of thunder and lightning, apparently attracted to their region, as well by the highly ferruginous character of many of the basaltic rocks, as by its elevation. The whole country, before brown and arid, now becomes clothed with the richest verdure, extensive tracts of cultivation meet the eye in every direction, fields of wheat, barley, and beans, give a European character to the vegetation, whilst the luxuriant herbage is fragrant with mints, thyme and other aromatic plants, and the charm of woodland scenery is alone wanting to transfer the delighted traveller to the regions of his

northern home; but the whole of this extensive tract is singularly destitute of timber, and save a few Kossos invariably marking the site of the scattered villages, a dark clump of funereal Junipers surrounding a Christian Church, or a solitary Wyra, scarce a tree is seen for miles around to break the monotony of the view.

Ankober, the capital of the kingdom, in 9° 35′ north latitude and 39° 54′ east longitude, is situated on an oblong conical hill, 8,200 feet above the level of the sea, rising from a mountain ridge of trachyte formation, divided from the higher range of the Chaka by the valley of the Airara river, which flows to the Hawash with a southward course. An elevated peak on the northern edge is entirely appropriated to the palisaded residence of the king and its numerous out buildings; the rest of the hill is occupied by the town, which towards the east, commands a very extensive prospect over the hilly district below and the distant plains of the Adiel; it contains about 2000 houses, which are thickly scattered over the summit and around the sides of the mountain, each dwelling enclosed by a bushy hedge, giving the site a green and cheerful aspect; it is traversed by narrow lanes, which from want of drainage and the uncleanly habits of the people, are generally in a filthy state, and in the rainy season become nearly impassable from mud, those from the upper to the lower portions of the town forming channels for numerous streamlets which fall from rock to rock in a thousand miniature cascades.

The Climate of Ankober, which was the head quarters of the Embassy, will be better judged from the following abstract of a thermometrical register kept during the years 1841 and 1842, to which has been annexed for the purpose of comparison, the thermometrical range of the Mahableshwar and Neilgherry Hills of Western India, the latter in latitude and elevation very nearly coinciding with Ankober.

The observations were made with horizontal self-registering thermometers of Fahrenheit's scale, sheltered from the rays of the sun, but freely exposed to the external air.

Station.	North Latitude.	East Longitude.	Elevation above Sea.	Mean annual temperature.
			feet	
Ankober	9° 35′	39° 54′	8200	55 5
Neilgherries	11 20′	77° 10′	7400	58 1
Mahableshwar	17 56′	73° 30′	4500	66 2

14. Abstract of a Thermometrial Register kept at Ankober during the year 1842.	Mean temperature of the month.		Means.				Extremes.					Number of rainy days.		Winds.		Mahubleshwar.				Neilgherries.			
	1841	1842	Mean daily variation.	Mean maximum.	Mean minimum.	Difference of mean temperature of successive months.	Greatest daily variation.	Least daily variation.	Extreme monthly variation.	Extreme maximum.	Extreme minimum.	1841	1842	Direction.	Force.	Mean of month.	Extreme maximum.	Extreme minimum.	No. of Rainy days.	Mean of month.	Extreme maximum.	Extreme minimum.	No. of Rainy days.
January		52.0	12.7	58.3	45.6	0. 2.	16.	8.	24.	65.	41.		0.	E. and E. S. E.	light.	67.1	79.5	54.	0.	53.1	68.	39.	1.
February		54.6	10.5	59.8	49.3	2. 6.	18.	4.	20.	66.	46.		7.	E. S. E. L. S.E.	light.	67.4	80.5	55.	3	56.	70.	41.	3.
March		57.2	11.5	62.9	51.5	2. 6.	16.	6.	23.	69.	46.		4.	E.	light.	71.1	86.5	54.5	0.	62.	77.	47.	0.
April.		55.2	7.7.	59.	51.3	2. 0.	11.	2.	16.	62.	46.		14.	E.	strong.	75.2	87.5	64.	5.	63.	77.	46.	10.
May		59.7	9.3.	64.3	55.1	4. 5.	13.	5.	16.	67.	51.		4.	E.	occasionaly strong	73.3	89.7	63.	3.	61.5	76.	50.	14.
June		62 1	7.9.	66.2	58.	2. 4.	17.	5.	17.	69.	52.		8.	E.	Do.	65.	81.5	53.	26.	58.	70.	48.	16.
July		58.1	9.1.	62.7	53.6	4. 0.	13.	6.	18.	69.	51.		28.	W. A. M; E. P. M.	moderate	60.7	70.	51.5	31.	58.7	70.	50.	19.
August	55.8	55.7	9.8.	60.6	50.8	2. 4.	12.	8.	14.	63.	49.	26.	28.	E.	Do.	59.9	66.	53.	31.	58.6	73.	46. 5	10.
September	55.3	55.2	9.0.	59.7	50.7	0. 5.	12.	5.	15.	62.	47.	13.	24.	E. A. M; W. P. M.	Do.	62.2	70.	56.1	18.	60.	69.	51.	19.
October	52.1	52.2	8.3.	56.3	48.1	3. 0.	11.	5.	15.	59.	44.	4.	10.	North 2 P. M.	strong	65.8	73.5	58.	12.	58.	67.	49.	15.
November	51.9	50.8	10.2	55.9	45.8	1. 4.	13.	6.	16.	58.	42.	4.	9.	Northerly	moderate	63.9	72.7	55.	0.	56.	66.	46.	8.
December	51.8	53.2	8.6.	57.5	49.0	2. 4.	13.	4.	14.	60.	46.	0.	20.	East.	light.	63,8	73.1	52.	0.	52.5	63.	42.	2.
Annual Means and Extremes		55.5	9.6.	60.3	50.7	2. 3.	18.	2.	24.	69.	41.		156			66.2	89.7	51.5	129	58.1	77.	39.	117.

Characteristics of the Months.

January, 1842. A fine clear pleasant month, with a few cloudy days.

February, 1842. Fine until the 8th when the weather became unsettled and cloudy, with occasional heavy rain, thunder and lightning, the commencement of the rain of Bounty. From the 15th to 21st cloudy without rain; 21st, 23d, 24th, occasional showers; afterwards cloudy.

March, 1842. A pleasant month, with occasional cloudy days and showers; on the 27th heavy rain at night, thunder and lightning.

April, 1842. A dull, cloudy and rainy, month; the rains ceased on the 24th and were followed by strong, cold, easterly winds.

May, 1842. A pleasant month with occasional cloudy days.

June, 1842. A pleasant month; the weather began to cloud over on the 13th with showers, and the rains of the Covenant set in on the 21st with thunder, lightning, and heavy rain, at night.

July, 1842. Frequent heavy mist in the morning, cloudy with showers during the day, with generally heavy rain at night, accompanied with thunder and lightning. Prevailing winds, easterly.

August.—as July.

September, 1841. The rains continued until the 12th ; latterly with heavy storms of thunder and lightning, afterwards cloudy weather with occasional showers and cold, strong, northerly winds.

In 1842. The rains did not cease until the 28th.

October, 1841. A fine month with cold, strong, northerly winds. In 1842, a dull cloudy and showery month, with cold northerly and north-easterly winds.

November, 1841. Cloudy with some rain until the 13th, afterwards fine cold weather, generally a cold northerly wind A. M. 1842, a dull, misty, showery month.

December, 1841. A cold pleasant month with occasional cloudy days: wind very light. 1842, a cold misty and rainy month.

The seasons of the kingdom of Shoa may be divided into, 1st. The rains of the Covenant, commencing on the 21st of June, July, August and September.

2nd. The cold season; October, November, December, January, and the first half of February.

3d. The rain of Bounty; the latter half of February, March and part of April.

4th. The hot season ; April, May and June.

From these tables it will be observed that the most marked character-

istics of the climate of Ankober, are the periodical rains, and its mild and equable temperature. The greatest difference between the mean temperature of the coldest month (December) and the hottest (May), having been only 8° degrees, whilst the greatest range during the whole year, between the extreme minimum 41° and maximum 69°, amounted to only 28 degrees. The mean annual temperature having been 55½°. It is much to be regretted that we had no Pluviometer to ascertain the amount of the fall of rain during the year, but judging from the average fall during the monsoon in India, it may be estimated at about 100 inches. Three Barometers received in India, were broken and rendered useless on the journey from the coast.

Perhaps there is no kingdom which possesses a greater variety of climate within its limits than Shoa. Leaving the parched plains of the Adiel on which is felt the fierce heat of tropical Africa, a journey of eight miles brings the traveller to Farri, 3000 feet above the sea, and possessing the genial warmth of an Indian province; proceeding onwards twelve miles, he reaches Alioamba, which with an elevation of 5000 feet, enjoys a mild, Italian sky; from whence ascending the Ankober mountain, a ride of but five miles he gains a height of 8,000 feet, and a climate only to be compared to an English spring, whose coldness may be judged from the fact, that fires are needed in the house morning and evening throughout the year.

THE POPULATION of the kingdom of Shoa and its dependences, has been estimated at two millions and a half, of whom one million may be considered Abyssinian Christians, the Amhara; and the remaining million and a half divided between the Mahomedan and Galla races. Ankober the capital, is supposed to contain from eight to ten thousand inhabitants, but the number varies much, a great decrease taking place on the departure of the king to any of his other residences.

The Christian inhabitants of this kingdom of Southern Abyssinia are a tall, stout and well formed race, with a good muscular developement and expanded capacious chest; their usual height varies from 5 feet 7 to 5 feet 9 inches, and a stature exceeding 6 feet is frequently met with; deformity is rare, but there are a few dwarfs, the shortest seen at the age of 34, having been only two feet four inches in height. Their features are regular and of the Caucasian family with a good facial angle; their colour varies from a brownish olive to the clear black of the Negro, but the most prevalent hue is a coppery brown with a tinge of black. Their hair is black, naturally long with some degree of crispness, and though the wig-like style

of dressing gives it an appearance somewhat resembling that of the Negro, its luxuriance and greater silkiness mark a strong difference between the two races.

The females are tall, stout, and masculine in appearance, their faces generally broad beyond the bounds of symmetry, and but few can lay claim to beauty; the shaved head or national style of dressing the hair, and the substitution of a blue stained arch for the eradicated eyebrow, sadly diminishing any pleasing expression they may naturally have possessed; much good humour is, however, generally pourtrayed in their countenance and in common with all Eastern races, their teeth are white, sound, and regular.

From marriage and cohabition with a numerous slave population from the Galla and Negro districts, an approximation towards a closer resemblance to these races is occasionally seen in the slighter form, or the thick lip and flattened features, but not so frequently as might be expected under such circumstances.

As before remarked, the Mahomedan male population differs but little from the Christian, and the Islam female is marked by the greater delicacy of her form and the fairer hue of her complexion. The same remarks apply to the Galla tribes, the men of which differ but slightly from the Abyssinians, whilst many of the females possess, in their younger days, much beauty and symmetry of form.

The Shoans may be considered a good humoured, cheerful race; their quarrels are usually confined to a war of words, and should the sword be drawn, the interference of the by-standers generally prevents any serious result; they are tolerably honest, more perhaps owing to the salutary government of their present ruler, than to personal disposition; but they are insatiable beggars, uncleanly in their habits, holding ablutions and cold water in the greatest horror; but little observant of trust, and bigotted in their religion, which is Christianity indeed, but in its most corrupt form; whilst the grossest immorality pervades all ranks, the marriage tie is held in little honour, concubines residing in the same establishment with the lawful wife; professed prostitution is unknown, but the loose freedom of intercourse between the sexes tends greatly to spread the ravages of syphilis, the scourge and punishment of this profligate race.

Most indolent in his habits, save when roused by the frequent military expeditions against the Galla, or employed in the light toils of husbandry, the Shoan, after a day spent in basking in the sun, in idle gossip with his neighbours, or listlessly gazing for hours on the wide prospect, generally

gained from his elevated home, retires to his bed as soon as the shades of night close in, and seldom leaves his couch, till the sun's rays have in some degree tempered the chilly dawn of his mountain climate. Useful industry is nearly unknown, but few artificers are required to supply the simple articles of domestic use or personal ornament, and whilst the severer household drudgery is performed by slaves, the females of the middle rank generally pass the entire day in the monotonous employment of spinning cotton thread for the weaver's loom.

The Abyssinians generally take two meals daily, one eaten early in the morning, the other in the evening. Their food is principally farinacious except among the higher ranks. Fermented bread of a good quality made from wheat flour is commonly used by the upper classes, whilst the diet of the lower, consists almost entirely of coarse thin leaves made from the Marshela or Juwari, or of sour bread resembling large pancakes prepared from the small grain of the Teyf, both being occasionally seasoned by immersion in a strong decoction of red chillies and salt.

All, when opportunity offers, indulge to excess in Brindo, devouring the raw and reeking flesh of the newly slain beast unseasoned by any condiment, the slaves and poorer retainers appropriating the viscera and intestines as their share; should any portion of the slaughtered animal remain unconsumed, or a supply of provisions be required for a journey, Quanta is prepared by cutting it in thin slips and drying it in the sun; or it is made into sausages called Qualama, with a plentiful addition of salt and red pepper and thus eaten without any further process.

The science of cookery is not, however, entirely unknown; the most common dish called wotz, much resembling a hot curry, is eaten with a liberal supply of bread. Vegetables are only used on their fast days, when the gooman, a coarse species of cabbage, constitutes their entire meal, having been sliced up small, it is boiled and eaten in large quantities, seasoned with black pepper and salt; boiled beans and peas are also sometimes used on these days. With the exception of limes, some sour grapes, and a few coarse oranges and plantains grown in the lower district, there are no cultivated fruits in the country.

The usual beverage in Shoa is either Tudge or Tulla, the very poorest inhabitant seldom drinking pure water. The brewing of tudge or mead is almost entirely restricted by the * Negoos to his own establish-

* The title of Negoos resembles in signification the ancient Pharoah; the latter kings of Egypt bore the title Necheos, it is the Nagood of the Hebrews. Bryant's Analysis of Ancient Mythology

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ment from which it is liberally issued to those entitled to the deergo, or daily allowance of provisions from the royal household. It is prepared from a mixture of honey, with commonly about six times its quantity of water, to which are added the berries of the Gesho (a species of Rhamnus) for the purpose of imparting a slightly bitter flavour; it speedily ferments, and is usually consumed a few days after preparation. It varies much in quality according to the quantity of honey employed, and some of the strongest descriptions of tudge, on the pots being carefully sealed, will keep for years and are of very intoxicating quality.

Tulla or beer, the common drink of all ranks, is brewed from marshela or barley, which is previously buried until germination commences, the bitter principle being imparted from the leaves of the Gesho. It is usually of very weak quality and speedily runs into the acetous fermentation.

The use of coffee is prohibited to the Christian population, but is a favourite beverage with the Mahomedans.*

These liquors are generally used in moderation, and (though there are exceptions) drunkenness is by no means a common failing, except on the days of their high religious festivals, when the whole population of the kingdom freely indulge in their use and frequently to excess; the consequences of these feastings which are generally accompained with a corresponding consumption of raw meat or brindo, frequently showing themselves in dyspeptic complaints.

These seasons of rejoicing are however more than counterbalanced by the frequent fasts enjoined by their religious ordinances, and which are generally strictly preserved.

These consist of—	days.
The Fast of Lent in March and April	56
,, of the Apostles, June	25
,, of Nimive	3
,, of Nahase, August	15
,, of the Nativity, December	4
In addition every remaining Friday and Wednesday is observed as a fast	76
	179

* Though I believe poisoning to be an uncommon crime in Abyssinia, the servant presenting a horn of mead or beer to a guest always pours some into the palm of his hand and drinks before him, in token of its purity.

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From which must be deducted the 14 Sundays on which day this observance is never kept..... 14

Total days. 165

or nearly half the year during which, dry bread, Gooman, and a few other esculent vegetables form their sole diet.

The smoking of tobacco is prohibited by the canons of the church, but is notwithstanding freely indulged in by many individuals who inhale its fumes through a rude water hookah; some preferring the leaves of the Atafaris (*Datura Stramonium*) for its intoxicating qualities. The leaves of the Endá ha hoolá (*Calamchoe Verea*) are also used in this way medicinally in asthma and some diseases of the lungs; snuff to which the interdiction does not extend, is a favourite luxury.

The Shoans taken collectively, are a well clothed race, the fabric employed, generally of home manufacture, is a warm cotton cloth, usually of a coarse thick texture, which is made up by the men into the senafil, a kind of drawers, very full and scarcely reaching to the knees, in appearance much resembling a kilt. The waist and upper part of the abdomen, are girded with a long narrow cloth called the makunuk, and a large robe or wrapper named the shumuh worn doubled, envelopes the whole person, the ends being thrown over the shoulder; by this garment the free exercise of the arms is much impeded and it would at once be discarded by a race of any but the most indolent habits. In war its place is supplied by the skin of the lion, the leopard, or other animal, by which they are more freely enabled to wield their weapons.

The sword, spear, and shield, are the national arms, the king however possessing a few hundred stands of muskets which are kept within the palace and only issued to the gunmen, when occasion requires. The sword is semicircular in shape, like a large sickle and sharp on both edges; it is worn on the right side, bound on the waist by a belt and the makunuk and projecting behind; apparently most inconvenient in form, and drawn with difficulty, it is used for all purposes, and in the consumption of brindo severs the portion of raw flesh, at the teeth, with an upward cut much endangering the face of the reveller. The shield is large, circular and of good construction, the best being made from the hide of the wild buffalo, and richly ornamented with brass or silver plates and bosses. The spears, of which two are carried into action, are strong, serviceable, and the long blade frequently forged in a most symmetrical shape.

The dress of the women consists of a loose gown, which is worn very

full and made from the same cotton cloth as the shumuh; a small makunuk is bound round the waist, a robe or shumuh exactly resembling and worn in the same manner as that of the men, being thrown over all. Occasionally on festival days, the women wear a narrow fillet of white linen bound round the temples, and on a journey a small turban is used as a protection from the sun.

A sheep-skin fleece or debalo, is commonly worn by the men in the cold weather, for which in the rainy season, a burnoos or cowled cloak of coarse black blanketing is substituted; no shoes or sandals are used, except occasionally on a journey on foot; at other times all ranks from the king to the beggar go barefooted.

No covering for the head is worn, except by the different orders of the clergy, who are distinguished by the use of a white turban; most of the men of the lower classes and nearly all the younger females, keep the head close shaved; whilst the matrons and men of higher rank wear the hair in a thick bushy wig called gofri, a most excellent defence against the sun, but which being plentifully bedewed with an anointing of butter, is most offensive to the smell, as well as disfiguring in appearance. A beard or mustache is seldom seen, the men of all ranks keeping the hair of the face closely clipped with scissors, a razor being never used for this purpose.

Both sexes are fond of ornaments, but their use is much restricted by the edicts of the Negoos; gold may be worn by the monarch alone, or some few of his more powerful nobles, to whom this privilege is accorded, seldom more than a plain ring of the precious metal being allowed even to these favoured individuals. A great variety of personal decorations, many of them of silver and displaying considerable taste, mark the prowess of the wearer against the Galla or Adel foe: necklaces of beads, or strings of small circular plates of ostrich shell are in common use. The personal ornaments of the females are more limited in variety, necklaces of small beads, tastily strung, are much prized, bracelets and anklets of brass or pewter are worn by all, whilst a button of black horn adorns the ear, replaced on holidays by a singular ornament of clustered silver balls. Both sexes of the Amhara wear a blue silk string, resembling a watch-guard round the neck, the matab or distinguishing badge of Christianity.

The clothing of the day forms the bedding at night; a few skins are spread on the cot or mud floor, on which the members of the family lie in a state of perfect nudity, the joint contributions of clothing being dis-

tributed over all; by this arrangement they suffer but little from the inclemency of the weather, and on the military expeditions, lie night after night without tents or any further protection from the severe cold, apparently without any detriment to their health, save that this close personal contact tends much to spread those contagious cutaneous affections, which are so prevalent amongst all ranks.

Their houses, generally perched on the summit of a hill, are good and serviceable in construction as a defence against the climate, and much resemble in design an Indian double walled tent; containing a centre room called the "ardurush," with its small encircling apartments, the "gwadas." A single door is generally the only aperture by which light or air is admitted, or by which the smoke from the fire, sunk on the earthen floor, finds an exit. The form of the house, which has no upper story is either oval or circular, the walls generally of rude stakes firmly bound together, and coated with mud; but where wood is scarce, they are constructed from unhewn stones and mud; the roof is conical and covered with a good thatch.

The ardurush is the common residence of the family, its sole furniture generally consisting of one or two rude cots called "ulgars," the gwadas being appropriated to the mules, the grinding mills, and for storing household gear. Ventilation there is none, and cleanliness is but little studied; the ulgars swarm with fleas and other vermin, whilst the rafters are black with the dense smoke from the wood fire, which filling the close apartment, occasions frequent attacks of opthalmia, and with the collected filth of years and the uncleanly habits of the residents, gives rise to, and perpetuates a variety of cutaneous diseases.

Prevailing Diseases.

The British Embassy had taken up its residence at the capital of Shoa, but a short period, before daily applicants applied for the purpose of obtaining medical advice, and a succession of patients subsequently availed themselves of it from our advent to the period of departure; seldom fewer than five or six attending daily, frequently more, and on several occasions as many as twenty assembling for advice on the same morning, many of them having come from the most distant provinces, and had the practice not been discouraged, the fowls, eggs, honey, butter, and other articles, they brought to propitiate the English Hukeem, would have nearly furnished a supply of minor stores for the entire establishment --

whilst in our excursions into the interior of the kingdom, a former patient would frequently be found at the village of our halt, whose gratitude was testified by the offering of some trifling article of domestic produce.

The Abyssinians appear to place implicit faith in the efficacy of European medicine, more particularly when accompanied with rigid directions regarding diet, and the exact period for which it is to be continued, all advice in this particular being strictly followed, and the medicines taken with tolerable regularity; on occasions when the Negoos himself has been the sufferer, the remedy was however always previously tried on one of his subjects, and on a favourable report being made the Royal patient himself commenced its use; in the event of sickness amongst the ladies of the blood royal, the customs of the country prohibited a personal interview. The Queen Besabish, having been attacked with rheumatism in the hand, on visiting the palace for the purpose of attending her, I was shewn into a secluded court, where she received me, seated in a small tent, a carpet being spread outside for my accommodation, and a seam of the tent partly opened for the exhibition of the afflicted member. On another occasion, advice being requested for one of her daughters, the Princess was found in the principal stable of the palace, in which a bed had been placed, behind the curtains of which she sat unseen, her legs the subject of consideration hanging outside. By his daughters by other wives, or the ladies of his chiefs no concealment of this kind was however affected.

Though placing full confidence in the power of European medicine, the Shoans, on all occasions, shewed the greatest dread and dislike to all surgical operations and would seldom consent to their performance. On one occasion at Angollalla, a boy with an extensive ulcer of the leg which had denuded the whole length of the tibia and was complicated with an ununited compound fracture near the knee-joint of long standing, was brought for advice; he was fast sinking from the effects of this severe injury, and it was evident that amputation offered the only chance of saving his life. Having experienced the impracticable character of the Abyssinians on like occasions, I requested an officer of the king's household, who was present and who I thought had acquired more liberal ideas on these points, to visit him with me, and then in his presence proposed the operation to his mother, but to my great disappointment he was horrified at the proposition and strongly advised me to do nothing of the kind. "If you succeed you will get no credit by it, people will say it was the will of God; if the boy dies, they will say you killed him and you

will have much trouble." He also spoke so seriously to the mother that she soon carried away her suffering boy.*

That personal vanity will however overcome this dread of the knife, I had an instance on another occasion, when a coarse bloated looking elderly man came for advice. On being asked what was the matter with him, "The matter, look here," (pointing to a small warty excrescence on "his forehead)" this is the matter — off with it, — cut it off — my face is quite spoiled and has become that of a cow." Whilst one inhabitant of Ankober, who frequently passed his time in watching my mode of practice and was himself considered no mean proficient in the science of medicine and surgery, brought an aged slave woman who had a small steatomatous tumour on her finger, for the sole purpose of witnessing the operation for its removal.

This distrust even extends to the use of the lancet, although bleeding is frequently practised by themselves in several affections. On one occasion late at night the Negoos requested me to visit one of his ardurush adari, or picked body guard, who was found lying in a small tent crowded with people; several priests were sitting by his bed side, whilst some of his friends were tying red worsted threads round his fingers and toes. He was perfectly senseless, having received a coup de soleil, and had been in this state since noon; half the people were immediately turned out, the tent thrown open to admit the cool breeze, and a vein opened, by which he was much relieved, at length opened his eyes, and finally was sufficiently restored to speak to those around him, who now began to whisper to each other that I was taking too much blood — that I was killing him; and they soon began to remonstrate so strongly, that I was compelled to desist, binding up the arm very loosely in hope the bandage might slip and give him further relief before they could stop the bleeding. Having administered some further remedies he was left with much fear that he would relapse into his former comatose state. On visiting him early next morning he was considerably improved, but still complained of fullness of the head; on proposing to bleed him again, his friends refused to allow me. On leaving him, a request was therefore sent to the Negoos that as he had placed the sick man under my care, I should not be interfered with in adopting whatever measures I might think necessary, and

* This boy was subsequently again brought for advice when the parents were as anxious for the performance of the operation as they had before been averse to it; but the child was so emaciated and the state of his health held forth so little promise of a favourable termination, that I was compelled to decline acceding to their request. R. K

asking him to give an order that he should be bled, to which he returned an answer that "if he was not better to-morrow, it should be done." On the morrow it was found that his friends had removed him in the evening to a neighbouring village, to place him out of my reach where he eventually recovered after a lingering illness.

During the sojourn of the British Embassy in Shoa, between two and three thousand persons applied for medical aid; from the unsettled place of our residence during the greater part of the period, no regular list of these applicants could be preserved, but the following table of cases seen at Ankober between December and April 1842, will afford some idea of the usual diseases coming under treatment, and their relative proportion.

Abstract of 400 *miscellaneous Cases exclusive of Syphilis, seen at Ankober between December and April,* 1842.

Fevers	Continued.	2	Anasarca	3	Exostosis	1	
	Intermittent	10	Bronchocele	7	Wounds	7	
Hepatitis		9	Stone in bladder	2	Ulcers	21	
Gastritis		1	Hernia	2	Abscess	5	
Bronchitis		1	Opthalmia	36	Fractures, recent	2	
Dysentery		5	Conseqr. Opacity of Cornea	9	Dislocation, old unreduced	2	
Diarrhœa		2	Amaurosis	2	Cracked Integt. of sole of foot	4	
Pulmonary Affection, Inflammatory.		9	Hypopium	2	Threatened abortion	1	
Phthisis		2	Nyctolopia	4			400
Catarrh		6	Cutaneous Affection Miscel.	63	Syphilitic cases treated during the same period and not included in the above list.		317
Diseases of the Heart		5	Lepra	26			
Aneurism of Aorta		3	Elephantiasis	6			
Cephalalgia		24	Inflammation of Ear	8			
Rheumatism		33	Chronic enlargt. Kneejoint	5			
Scrofula		26	Ditto Bursa Do	2			
Hydrocephalus		5	Steatomatous tumours	3	Total number of cases seen between Dec. and April 1842		717
Epilepsy		7	Abscess Antrum Maxillare	1			
Hysteria		2	Gonorrhœa	10			
Chorea St. Viti		2	Inflammation Testicle	2			
Dyspepsia		7					
Paralysis		2					
Ascites		1					

From this list it will be seen that the Abyssinians are exempt from but few diseases usually met with in other countries, though from the equable nature of their climate and the elevated region they inhabit, they may be considered a comparatively healthy race. There are however two diseases which are so extremely prevalent as to claim especial notice in

this report, I allude to Syphilis and Tænia, the latter, no case having come under treatment, not being included in the above abstract.

Syphilis called in Amharic "kitting," has from all accounts only been known in Southern Abyssinia during the last 40 years, but we were unable to obtain any information regarding the source of its first introduction into the country. The Gallas are still, generally speaking, exempt from the scourge, but it is at length beginning to attack the tribes bordering on the Amhara districts. Within the kingdom of Shoa, possessing no sure remedy for the disease, it has become extremely prevalent and is committing great ravages, attacking all ranks and ages from the lowest beggar to the immediate relatives of the Negoos, whilst infancy and decrepid old age offer frequent evidences of its destructive effects, the consequence of parental taint or the sequela of disease contracted in earlier years.*

It is met with in all its forms and the proportion of its several stages which came under notice will be better judged of from the following table.

Abstract of 300 Syphilitic patients seen at Ankober, between 1st December and 20th March, 1842.

	Primary.	Affections of nose.	Affections of both throat and palate.	Affections of both throat and nose.	Nodes.	Syphilitic Ulcers (secondary).	Cutaneous Syphilitic Affections.	Syphilitic Rheumatism.	Total.
Males..	38	40	30	21	4	16	17	5	171
Females..	13	31	21	28	4	23	9	,,	129
	51	71	51	49	8	39	26	5	300

Exclusive of this list, 11 children and infants were brought suffering from syphilitic sores about the pudenda and nates.

* On several occasions priests, monks and even nuns, applied for medicine for this disease, who unwilling to acknowledge the infraction of their vows, were always prepared with some ready excuse for the contraction of the disease; by some it was said to have been produced by indulging too freely in the flesh of partridges, and by others from eating a portion of a diseased fowl, for they consider poultry capable of contracting the complaint.

R. K.

In all these cases, many of which were very severe, the pilula hydrargyri combined with opium, was found a mild and certain remedy in stopping the ravages of the disease, the usual dose being from two to three grains of the blue pill, with $\frac{1}{2}$ grain of opium given night and morning, mercurial remedies even in small doses, speedily producing salivation in this climate. From the great number of applicants the stock of the pil. hydrargyri brought from India, though large, soon became exhausted, but a constant supply of a very respectable quality, was prepared from some reserve mercury for the artificial horizon, the pulp of dates being substituted for the conserve of roses. The Shoans, with the doubtful exception of their hot springs, have no remedy for this complaint, although there are several plants in their materia medica stated to possess anti-syphilitic powers.

As might be expected from the volcanic nature of the country, these thermal springs are very frequent; they are found at the village of Gossamee in Morabeite; Kowut, in the province of Gidem; Korari, about 10 miles S. E. of Alioamba; Makhfood, in the bed of the Jowahah river; Metak, about 3 miles south of Ankober; Finfinni, in the Germama plain; in the bed of the river Kassam in the district of Aden—and in the neighbourhood of the extinct volcano of Fontali. I am not aware of the existence of any mineral waters in Shoa.

Of these hot springs, the most important are at Gidem, which were visited by the Embassy in December 1841. They are called Tel-ambo and are situated near the village of Kowut in a dell of trachyte formation, through which flows one of the mountain sources of the Jowawah. These springs are four in number; in two of them the water issues near the river bed, from the bottom of small shallow pools in which the thermometer rose to 118°; they had no perceptible taste or smell, nor was there any deposit in their channels, which were lined with a black slimy vegetation. A third called Mariam and dedicated to the Holy Virgin, was, half cave, half bower, its entrance being secured by a rude door, the pool, the temperature of which was 115°, being about 10 feet long by 6 broad, with a depth of three or four feet; it was divided by a transverse beam into two compartments, in each of which we saw a naked victim of syphilis undergoing the process of maceration, which is continued for hours. A fourth called Aboo (the father) in which the thermometer rose to 120°, issued about five feet above the level of the brook, from below a stratum of conglomerate pebbles, traversing a sandstone bank; its water poured in a continuous stream from a small wooden trough, be-

neath which was placed a broad flat stone for the accommodation of the bathers.

The sanatory virtues of these springs are held in high repute, principally in syphilitic cases, but they are also used for rheumatism, in fever and some cutaneous affections. Each person who avails himself of them, pays a tax of one amooli ($2\frac{1}{2}d$) to the Negoos, for the collection of which they are placed under the charge of a petty Governor. They appear to be much frequented, as we saw many invalids, both male and female, who were undergoing the discipline of the baths, during which they reside in small temporary huts in the neighhourhood.

We also passed, at the end of a day's march in the district of Aden in April 1842, some hot springs in the bed of the river Kassam about ten miles to the northward of the volcanic mountain of Fontali, which is said to have been in an active state about forty years ago; their temperature was about 140°, and on reaching them our Abyssinian escort eagerly hastened to the shallow pools, in which, throwing off their clothes, they wallowed for a few minutes, whilst others were unable to bear the heat and merely dashed the water over their bodies. These springs are considered both a preventive and cure for syphilis.

In Northern Abyssinia, sarsaparilla, called in Amharic "wooshwah," is used for venereal affections and is said to be a remedy for all forms of the disease; it is reported to be brought from India and Algiers, and is procured at Massowah, where six dollars weight sells for one dollar, and as the quantity required to complete the cure costs at least twenty dollars, its use is restricted to the wealthier classes. During its use the patient is confined for forty days in a room raised to a high temperature, continually smoking the wooshwah, which is cut up small and its fumes exhaled from a common pipe. May not the power of eradicating syphilis in this mode of treatment, as also in the use of the thermal springs, depend upon their long continued sudorific action on the system?

The next disease deriving importance from its extreme prevalence in Abyssinia, is the Tænia Solium, called (wosefat,) which species of intestinal worm attacks all classes, and there are very few natives who are exempt from them. By themselves it is attributed to eating brindo or raw flesh, and they assert that those who abstain from this diet are free from the complaint, but that if it once makes its appearance it is seldom eradicated; the Abyssinians retaining the opinion that each joint is capable of reproducing a perfect worm.

Fortunately the country which is so peculiarly the seat of this

disease, possesses a most efficient remedy in the flowers of the Kosso, which tree being so indispensable to the health of the inhabitants is carefully preserved, and a group of them is always found in the immediate vicinity of the villages.* This valuable anthelmintic is taken by every individual regularly every two months, children commencing the discipline at the age of five or six years, and continuing it for the remainder of their lives. This frequent and indiscriminate use, however, gives origin to serious complaints, of which prolapsus ani is the most common; the great exhaustion following its violent action when injudiciously administered, sometimes even terminating fatally. The continued use of this drastic purgative, though necessary to the preservation of health, must tend to shorten the natural period of existence, for the Shoans are not a long-lived race, and instances of advanced old age are rarely met with.

Kosso (*Hagenia Abyssinica*) when in maturity, attains the growth of a moderate sized tree, its red racemes of blossom much resembling in form and distribution, those of the Horse Chesnut. These flowers are first dried in the sun, and all stalk and extraneous matter carefully removed, and are then pounded fine. The dose varies from six to eight drachms weight, according to the quality of the drug and strength of the person, and is drank early in the morning in a cup full of cold water; if kept mixed for any length of time its power is said to become deteriorated. It usually acts in the course of a couple of hours, the first evacuations being watery and the worm generally expelled by the third or fourth; during the time of its operation, abstinence from food or drink is enjoined, but afterwards in the evening, the patient is directed to eat freely of hot spiced dishes, commonly wotz or dillee, and drink mead or beer. Should five or six hours elapse without indication of the medicine having taken effect, it is recommended to eat a full meal seasoned with hot condiments, which is said to quicken its operation.

A favourable opportunity occurred of trying the effects of Kosso, on a European soldier of the escort who was troubled with the lumbricus teres, on whom it acted mildly, and effectually. Should it be considered a desirable addition to the materia medica of Europe, a plentiful supply of Kosso

* To mark the importance attached to this remedy, there is a village near Angolalla without a tree of this species in its neighbourhood, from which circumstance it has obtained the name of "Dewasa Kosso,"—which was explained as meaning, "may God give you Kosso."

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might be easily obtained at Massowah on the Red Sea, from the merchants of Abyssinia who visit that port, which is but a journey of five or six days from the country of its growth; or as it appears of a hardy character, and the climate of Abyssinia seems favourable to northern vegetation, the tree itself might perhaps be successfully introduced, by seed, into Europe.

Scrofula (Mishro) is another disease very common, but confined almost exclusively to the fair smooth skinned Islam females. Warmth of climate has usually been considered opposed to the production of this disease, but all the cases seen, have come from the warmer districts of the lower country; in the colder and more elevated regions of Shoa, it is almost unknown, and the coarse masculine Amhara women appear completely exempt from its attacks; as elsewhere it generally shews itself in chronic enlargements of the absorbent glands of the neck, which at length imperfectly suppurate, and are followed by extensive and indolent ulcers.

As scrofulous affections of the glands of the neck are the prevailing scourge of the delicate Mahomedan females of the lower districts, so bronchocele is equally common amongst the females of lighter complexion and slighter form, particularly the Gallas, of the more elevated tracts, and almost appears to be the result of the same diathesis modified by climate, the Amhara females being equally free from both these affections. Though producing considerable deformity, and sometimes attaining a very large size, these enlargements of the thyroid gland appear in no way to impair the general health, or interfere with the functions of life, and are seldom submitted to medical treatment, though in some few cases, a puncture has been made and the wound kept open, forming an issue by which the size of the tumour has been much diminished. Whilst a fair complexion, delicate skin, and slight configuration, evidently predispose to these enlargements, it is difficult to determine the exciting cause; the country in which they are most prevalent, is a highly elevated plateau generally from 8,500 to 9,500 feet above the sea, and possessing a dry and pure atmosphere; snow being unknown, its water cannot be adduced as a cause.

Fever, generally first in importance amongst tropical diseases, here also holds a conspicuous rank, but its ravages are mostly confined to the lower districts in whose fertile and well watered valleys, vegetation is rapid and of luxuriant growth, whilst the uncultivated tracts, clothed with a densely wooded jungle, and traversed by broad and overflooding rivers, abound with extensive swamps, which afford every requisite for the pro-

duction of malaria in its most malignant form, and these tracts are much dreaded, and when practicable, carefully avoided during the months succeeding the rainy season.

No opportunity offered of observing the character of the fevers in the lower country, but from the accounts received, they appear to be principally severe intermittents called by the Amhara "wobur," with a few and generally fatal cases of the remittent form, Amharic "mich." In the upper districts, fevers are by no means common; a few mild cases of the intermittent form occurred after the rainy season, which were easily subdued by the use of quinine, and which here, as in India, appeared to be distinctly influenced by the lunar changes.

Cholera, in Amharic "ougaret," in Tigri "kumbel," eight years ago (1834) raged violently in the lower districts of Southern Abyssinia, and was attended with a great mortality in the province of Gidem, Makhfood, Channoo, and Burhat. Its course is said to have been from north to south, first appearing on the frontiers of the Wollo country, and passing to the districts inhabited by the Galla tribes to the south and south-west, from whence most probably it penetrated to the unknown regions of central Africa. The more elevated regions of Shoa remained nearly free from the disease, a few isolated cases only appearing at Ankober and Angolalla. In character it appears to have resembled the Asiatic cholera, and been marked by vomiting, purging, and spasms, the cases usually terminating fatally in twenty-four hours.

In the following year 1835, a severe famine from a failure in the rains, was followed by a great mortality throughout the kingdom, Ankober having been half depopulated; but from the description of its mode of attack, it appears to have been of a dysenteric character, marked by a severe pain in the abdomen and frequent purging of blood, under which the sufferer usually sank in from eight to ten days.

Of Variola, the small pox, in Amharic (Fontana,) no cases have been met with, but it is said to be occasionally very prevalent, and to be attended with great mortality. On these occasions, on the disease first making its appearance, a boy affected with variola is selected, of pure blood, a slave not being admissible, he is strictly confined in a house and carefully secluded. On the pustules becoming fully developed, a large assemblage of people to the amount of hundreds, collect from the neighbouring villages for the purpose of being inoculated. The operator (not a priest) is chosen from the number, for his character of high rectitude, by whom the matter is collected from a number of pustules, and mixed

with honey in a small horn. The persons to be inoculated have an incision made on the fore arm with a razor, into which a small quantity of the variolous matter is introduced by means of a pen; a pledget of cotton is applied over this and the arm bound up. In seven or eight days the eruption appears, sometimes merely a few pustules, but frequently more severe and occasionally death supervenes. Many persons are seen with a well defined cicatrix on their arm from this operation, which in Amharic is called "kutavit," but regarding the period of its first introduction into Abyssinia they possess no tradition.

Soon after the arrival of the British Embassy in Shoa, the small pox was reported to have made its appearance near the northern frontiers, and the Negoos requested advice as to the best mode of stopping its ravages. A plentiful supply of lymph having been brought from India, a proposal was made, to visit the threatened districts, and introduce the practice of vaccination; but the offer was received with great coldness and suspicion, and declined until the disease should have shewn itself within the kingdom, and the subject was never afterwards referred to.

There are but few other diseases, requiring particular notice. Inflammatory affections are rare, with the exception of ophthalmia, which is generally met with in a chronic stage, and soon yields to cleanliness and the use of astringent collyria. A few cases of pulmonary affections were seen requiring active depletion, as also three or four instances of confirmed phthisis. During the cold foggy weather of the rainy season, catarrhs were common, for which the Shoans administered gruel, or hot mead seasoned with red pepper, on retiring to rest, which doubtless proves equally efficacious with the white wine possets and other cordial potions, so liberally recommended by the matrons of England.

Rheumatism is a frequent complaint, as might be expected from the cold and damp character of the climate, during several months of the year.

Affections of the heart also seemed more than proportionally prevalent, generally hypertrophy in persons with a narrow and badly developed thorax, and apparently occasioned by the accelerated circulation, required properly to oxygenate the blood, in the attenuated atmosphere of this elevated region. Four cases of aneurism of the aorta were also seen forming elevated pulsating tumours, in one protruding from the right side of the thorax, and in another having produced absorption of the upper portion of the sternum.

Epilepsy is by no means a rare disease, the sufferers being considered possessed with a devil. Amongst children were also seen several cases of

hydrocephalus, chorea St. Viti and marasmus, and three cases of lithiasis occurring in boys between the age of four and ten years; amongst which class of patients were two cases of inflammation and abscess of the hip-joint.

But few inhabitants of Shoa are free from cutaneous affections, induced by their unclean habits and propagated by the custom of sleeping together in close contact in a state of complete nudity; of these the most common are psora, herpes, and tinea capitis; but many cases of the more formidable order of lepra elephantiasis are seen in all their stages, from the simple decoloration of the skin, to the ulcerated swollen, and mutilated state of the extremities.* In one case of elephantiasis, the scrotum was enormously distended and formed an immense pyriform tumour descending to the knees.

Two cases of simple fracture of the fore arm, and two of the clavicle were treated, as also a very severe case of compound fracture of the tibia and fibula, in a woman who (in a fit of jealousy,) had also received from her husband several other severe sword-cut wounds. Several old and unreduced dislocations were brought for assistance, whose long standing rendered any attempt at reduction hopeless; and one recent case of dislocation of the elbow-joint in a boy, in which extension proved successful. An instance occurred of the lodgement of a bone in the esophagus, of three days' standing, the ejection of which followed the introduction of a probang.

Parturition is occasionally attended both with difficulty and danger, three cases of this description having come under notice, one of protracted labour, and two of malpresentation, one of which terminated fatally from exhaustion, after three days suffering. By the superstitious Abyssinians, these difficulties are attributed to the evil consequence of the shadow of an enemy, passing the house at the moment of conception. At the time of delivery, the woman is placed in a kneeling posture near the edge of an ulgur or cot, a couple of female friends or hired nurses attending to support her, and receive the child. The Shoans do not appear to be a prolific race; large families are uncommon, and few women are the mothers of more than three or four children.

The Practice of Medicine amongst the Abyssinians of Shoa, is of a purely domestic character, there being no professed practitioners who

* Leprosy is not considered contagious by the Abyssinians, nor do they hesitate to associate with those afflicted with the disease

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by a regular course of study, prepare themselves to alleviate the sufferings of disease. A few individuals have acquired a more extended knowledge of the supposed virtues of their drugs than others, whose precepts are held in high repute, but these are considered family secrets of esteemed value, and are with reluctance divulged; but more reliance is placed in the efficacy of charms, spells and amulets, than on medical treatment, save when recommended by the acknowledged superiority of European skill.

All ranks attempt to shield themselves from disease by the use of amulets, which sometimes consist of pieces of wood possessing some supposed secret virtue; shreds of dark blue paper carefully enveloped and worn on the arm, are considered a sure medicine for head-ache, whilst in the event of serious illness, threads of red worsted are bound round the toes and fingers, and the debtrar or scribe is applied to, who for a fee of from two to ten amoolis, (*5d* to *2s.*) inscribes a portion of the Scriptures on a narrow scroll of parchment, which is tightly rolled up in a red leather case and worn about the person, and many are seen with an accumulated collection of these preservations, suspended from the shoulder like a string of bandoleers.

Secret spells are also held in repute; should a person be attacked with fever, the head of a red cock is sometimes cut off, with certain stated rites, and its blood sprinkled on a road, when they believe that the disease will be transferred to the first person who crosses the infected spot. The Negoos himself on returning from one of his excursions having nearly fallen into one of these traps, was greatly enraged on the occasion, severely punishing the offender, and ordering that the treacherous custom should be discontinued in future.

Even in the collection of the simples which constitute the greater portion of their materia medica, certain forms are directed to be observed; a silver ring must adorn the hand with which some of these plants are gathered, others must invariably be plucked with the left hand, should the right be used, the virtues cease; whilst, in the collection of all, a fortunate day must be selected, or the labour is useless.

The following is a list of the plants in the highest estimation for their medicinal powers, with the systematic names of such as have been determined by Dr. Roth.

List of Plants used Medicinally in Southern Abyssinia.

Amharic name.	Systematic name.	Properties.	Remarks.
Ashkoko Gooman...	.....	Epilepsy.	
Woina gooft.....	.....	Anti-Herpetic.	
Koret	.....	Abortive	Also used in tanning.
Holgub	.....	Sore throat.....	A decoction is used as a gargle.
Tullinch	Achyranthes	Styptic.	
Ras Kimmur	Leonotis.	Purgative and Anthelmintic.....	A decoction drank with a little oil.
Tooft	Rumex	Abortive.	
Ya bug elat	Tilaspi bursa pastoris	Febrifuge.	
Lit	Malva.....	For swellings.....	In fomentation.
Dora koos.....	Cardunceilus	Febrifuge.....	A decoction.
Enda ha hoola.....	Calanchoe Verea ..	Asthma	Is smoked.
Ekkool kassi.....	.....	Boils.	
Lataffee.....	.....	Ulcers	For ripening buboes in the groin or axilla.
Eesa debtera.....	.....	Cracked skin	More particularly for the soles of the feet.
Cosho shilla.....	Onopordum	Rheumatism	A decoction used as a fomentation.
Fegoor tullinch	Achyranthes.	Rheumatism	
Ahia endote.....	Phytolacca	Syphilis.....	Seeds also used as a charm against hydrophobia.
Ya medur oomboi..	Cucumis Africanus..	Syphilis and Fever.	
Dedaho	.....	Syphilis.	
Kut khulla.....	.....	Herpes.	
Cheffie	.....	Herpes.	
Seral buzzo.....	.....	Epilepsy.	
Kaloa	Elaeodendrum.....	Purgative.....	Used in epilepsy.
Gizeemah	.....	Antispasmodic.	
Kumbo	.....	Epilepsy.	
Kuktung gimaro....	.....	Epilepsy.	
Leganien	.....	Epilepsy.	
Jooloolot.	.....	Febrifuge.	
Jikokot	Myosotis	Febrifuge.	
Misritch.	Cornutia	Febrifuge.	
Kantchil	.....	Syphilis.	
Kolquall	Euphorbia Abyssinica	Syphilis.....	The sap is used.
Amararit	.....	Emetic.	
Tuccatri	.....	Emetic	
Essa soi.....	.....	Against snake bites.	
Ahmed madoo.....	Chenopodium	Ulcers.....	Also used for cleaning metals.
Facsci	.....	Febrifuge.	
Barbaridjo	.....	Febrifuge.	
Ya Simmur roos....	.....	Aphrodisiac.	
Cheffrik.	.....	Aphrodisiac.	
Dog.....	.....	Aphrodisiac.	
Gooman.	Brassica fruticosa..	Ulcers	A decoction is applied.
Embachoo	.....	Dislocations.	
Feela fitch.....	Amaranthacea.....	Astringent	For stopping purging in cattle.
Kosso	Hagenia Abyssinica.	Purgative	Also anthelmintic.
Kashamio	Nagcia	Purgative	The berries given to children.
Enkerdad	Lolium temulentum.	.....	Much dreaded as a poison.
Ashkila	Smilax.....	Astringent.	The wood is used as a tooth brush.
Adguar	Melanea Verticillata.....	Purgative	The berries.
Goolo	Ricinus afer.....	Purgative.....	Hot, used medicinally.
Djodjo	Scrofularia frutescens	Febrifuge	Also used as a charm against being robbed on a journey.
Lomi Shell.....	Acynos	Aromatic.	

The practice of surgery is equally rude and unadvanced as the science of medicine. The Shoans being a mounted race and frequently engaged in warlike expeditions, a rude mode of treating the more common accidents is known to all, and each warrior considers himself competent to assist his wounded comrade, whilst every village produces its proficient in the arts of bleeding, cupping, and the application of the actual cautery, which are freely used in many complaints. When questioned about their surgical operations, they relate a long list of marvellous cures performed, most of which however are so unworthy of credence, as not to deserve a record, though a few have been inserted to show the nature of their ideas on this subject.

In the treatment of recent dislocations, direct manual extension is at once had recourse to; but if the accident is of a few days standing, a poultice of the undigested contents of the stomach of a sheep is applied over the joint, or it is bound up in the leaves of the embachoo tree, and after a day or two, extension is attempted; but they are ignorant of the advantage to be derived from relaxing the power of the muscles by varying the position of the limb, nor does the number of the unreduced cases met with, speak highly of their knowledge in discriminating these accidents, or their skill in treating them.

In fractures, extension is made until the limb is ascertained to be of the same length as the other; short narrow splints are then applied, and the part bound up firmly until union has taken place. In a case of severe compound fracture of the tibia which came under notice, one of these splints had been applied directly over a projecting portion of the bone, which subsequently required the use of the saw before reduction could be effected.

A case was related in which a fracture of the leg in a man of high rank having united badly, producing lameness and deformity, the leg was laid on a board, and the bone rebroken in several places with a stone; the limb having been restored to its proper length, was again bound up in splints and continued extension kept up by suspending the leg from the wall, the patient having been kept on his back during treatment, and in twenty days a satisfactory union had been completed. They also say that in some severe comminuted fractures of the cranium, it is common to abstract the fragments and replace them with a corresponding portion of skull taken from a recently slain sheep or goat, over which the integuments are drawn, adhesion taking place, and no ill consequence following the introduction of the foreign portion of bone.

In incised wounds of any extent, the continued suture by needle and thread is generally used, or the edges of the wound are brought together, and thorns introduced through them at distances of about an inch, and thread then wound round them, as after the operation for harelip. In a severe lacerated wound of the thigh inflicted by the tusk of an elephant at Gidem, this rude contrivance was so effective in keeping the parts in apposition, that no alteration was required; a mixture of finely powdered Kossa with a gum resin called kurvi, is generally applied over wounds of this description.

In contused wounds where adhesion is not expected to take place, it is usual to fill the wound with "dillee," a stimulating condiment, compounded of red chillies, salt and garlic, for the purpose of promoting suppuration and the production of granulations. Amongst the Belooches of Scinde the same practice prevails, and in the treatment of their very severe sword cuts, the cure is usually commenced by the application of curry powder.

In a wound of the abdomen, through which the intestines protruded, which could not be returned, a small gourd was obtained, cut in half, and carefully shaped; within this the portion of intestine was lodged, the gourd was then introduced beneath the integuments which were drawn over it, adhesion took place, and the man, Ayto Gubroo, lived for several years after the operation. This is said to be by no means a rare instance of this mode of treatment having proved successful, wounds of this description being rather common from injuries inflicted by the spear.

To ulcers, a strong decoction of gooman, a coarse species of cabbage, is a common application; and in some indolent cases, I have seen the dross from the iron smelting furnace sprinkled in a state of fine powder over the sore. To burns and scalds they apply a solution of the common ink of the country, which is brought in cakes from the Somauli country, and appears to be a composition of mucilage of gum Arabic with soot or lamp black.

Bleeding is often had recourse to in fevers and severe head aches, and is performed by applying a stick across the mouth; a tight bandage is then fastened round the neck, and on the veins of the forehead becoming turgid, one generally in the mesial line, is opened with a razor and bleeds very freely; cupping is also a common practice, the incisions being made with a razor and suction effected by a horn as in India, the air being exhausted by the mouth through a small aperture in its upper end. In cases of inflammatory sore throat, it is common to introduce the fore finger and sca-

rify the lining membrane with the nail pared sharp for the occasion, which is followed by a copious effusion of blood.

Leeches are to be procured, but they are of small size, and inefficient for medical purposes, but most probably might be improved by proper culture.

Actual cautery is the usual remedy for rheumatism and various local pains; it is effected by producing ignition by the rapid friction between the palms of the hands, of a piece of light wood received in a small hollow of another portion, the ignited end of the stick being applied to the affected part; or a small pile of rag is placed over the spot, which is set on fire and allowed to smoulder down. It is a common practice to make frequent applications of cautery on the right fore arm, as they imagine by the contraction of the cicatrices, the muscles become more firmly bound, and the arm strengthened for the exercise of throwing the spear.

Teeth are abstracted by the common pincers of the blacksmith; if these fail, the offending tooth is punched out with a nail and stone. For tooth ache, they chew over the affected part, a small bag filled with the fresh leaves of hot and aromatic plants.

During the sojourn of the British Embassy in Shoa, its members and followers, amounting to above thirty individuals, natives of Europe, of Western Asia, and of India, enjoyed almost uninterrupted health; a few slight cases of fever, rheumatism, catarrhs and other complaints prevalent in the country occurred, and one severe dysenteric affection in a soldier of the escort, a relapse of disease contracted in India, but none deserving of particular notice. And in concluding this report it affords me great pleasure to state that during the two years absence of the Embassy, no death from natural causes has occurred, speaking highly for the healthy character of the climate of Southern Abyssinia, and a rare event in the history of African exploration.

Article II.

Cases illustrative of the Pathology of the Diseases of Bombay. By C. Morehead, M. D. Part II.*

Presented August, 1843.

Preliminary Observations. Though it must, to a certain extent, be admitted that the great attention which has been paid of late years in Great Britain and on the continent of Europe to the study of morbid anatomy, and the many excellent works which have been published in illustration of this department of pathology, have been the means of attaching to it too exclusive an importance;—still it is not to be disputed that the facts of morbid anatomy, viewed in their proper relation to the other essential facts in the history of disease, are of undoubted value; and it may be, perhaps, also, conceded, that they have not as yet been turned to the fullest account of which they are susceptible in their bearing on physiology, pathology and therapeutics.

If such opinions be, even only to a certain degree, correct they justify the great labour and time which have been bestowed by pathologists in Europe, in collecting and recording cases illustrative of the morbid anatomy of the diseases open to their observation; and they will explain the object which I have had in view in thus† attempting, to the extent of the opportunities which I have enjoyed, to add to the (comparatively,) very meagre records of the morbid anatomy of diseases as observed in India.

The general accuracy of the cases narrated in this, and in my former communication, may, I believe, be depended upon; for the subjects of them have been, with very few exceptions, under my immediate care, and the examinations after death and the record of the appearances observed

* Continued from the 2nd number of the Society's Transactions.

† Also, with a similar object, a paper published in the Edinburgh Medical and Surgical Journal for the month of April 1832, and another in the 1st part of the 7th volume of the Transactions of the Medical and Physical Society of Calcutta.

have been made by myself except in a very few instances and these, I think, have all been acknowledged.

In drawing up, from the Hospital diaries, the introductory summary narrative of symptoms, I have aimed to exhibit the prominent features of each case, and, more particularly, to detail those symptoms which have had an evident relation to the morbid appearances found after death, —keeping in view the importance of noting, when practicable, the first indications of the morbid actions which have led to the lesions of structure.

It has, moreover, been my endeavour, when circumstances permitted, to note any well ascertained facts of the previous history, as regard former disease,—or habits, as regard modes of life, of the individual,—bearing on the elucidation of the state of constitution existing at the time of attack of the particular disease. The former consideration has an important reference to the appearances, found after death, of the organs which may have been affected with disease at some previous period;—the latter tends to throw light on the character of the lesions likely to result, and is of essential consequence as guiding to a right course of treatment.

My object, however, has not been in every instance, merely to illustrate the pathology of the particular disease at the time present; but I have also endeavoured to keep in view questions of general pathology, and not altogether to lose sight of the occasional bearing of cases of disease on some questions of physiology;—and these objects have been present to my mind, more particularly, with reference to the following considerations.

1st. At different periods in the life of individuals, certain organs *(e.g.)* the liver, the thymus gland, the lungs, &c.—undergo certain changes in their anatomical structure, to adapt themselves to the varying degrees of necessity of their respective functions, to the animal system, at different periods of life. Such being an admitted fact in physiology,—is it not probable that the peculiar influences of different climates or other external agencies may produce varying degrees of necessity for the exercise of different functions,—tending to cause alterations of anatomical structure somewhat analogous? My belief is that the operation of this principle is traceable, and that it constitutes a subject of interesting and not unimportant discussion.

2d. To connect the appearances, found after death, of particular organs, with the well ascertained fact of these having at former periods of the life of the individual been the seats of disease,—is a very important branch of the study of morbid anatomy; and it is that department of the

subject which, in my judgment, has not yet been turned to the practical account of which it admits in the treatment of disease. For, if it appears very distinctly (which I believe to be the case) that considerable organic changes,—ulcerations, and thickenings of the tissues of important organs,—are recoverable from,—it then becomes a very essential consideration in the practice of medicine, to keep this fact constantly in view with the object of preserving the system in the condition which, when these changes have once taken place, will give to the altered tissues the best chance of recovering their natural state, to the extent of which they are susceptible. There can be no doubt that this law and the indication of cure proceeding from it, have been too much lost sight of; for, it may very justly be asserted, that frequently the treatment of local disease has been too exclusively directed to the prevention of organic changes in tissues, in forgetfulness that such treatment, after a time, tends to favor those very changes which, at an earlier stage, it is calculated to impede. Too little regard would also seem to have been given to the fact, that the kind of treatment which ought to be adopted with the view of repairing injuries, *e. g.* inducing the granulation of ulcers or the absorption of deposits of lymph, is in a great many instances altogether different from the treatment which is of avail in preventing these changes from taking place. Hence the injurious consequences which, under these circumstances, have too frequently resulted from depletion, and other antiphlogistic measures having been too actively adopted, and too long pursued, to the neglect of the important fact, that in the management of all such diseases, there is a stage when these measures should be altogether discontinued, and an opposite line of treatment (tonic) should be cautiously adopted; for, it is on the precision with which this stage is discriminated, that the chances of a successful result, from the exercise of the reparative powers of the animal system, depend.

3d. It may, I think, be assumed that the practice of examining after death the state of all the organs important to life, even though not having given indications of disease, is calculated to throw light on some questions of physiology. It is under this impression that the condition of the small intestines and of their contents is described in several of the cases, though there had not existed any indication of disease there, during life. Indeed there would seem to be good grounds for supposing that observations of this kind, viewed in relation to certain facts of pathology and of comparative anatomy, bear on certain questions regarding the functions of the liver and of the small intestines, not as yet, I believe, satisfactorily explained; nor, does it appear to me unreasonable to anticipate, however, much op-

posed to the current opinions of many Physiologists,—that such a line of enquiry will be found more likely to elucidate these questions, than a too transcendental application of the facts of animal chemistry.

It was, at one time, my intention to have postponed the publication of this report till I might be enabled to annex to the cases, the remarks on pathology and treatment which a consideration of them, in connection with those cases of similar diseases successfully treated, is calculated to suggest. On further reflection, however, it has seemed a more expedient course to maintain the series unbroken, and to make the practical remarks the subjects of separate communications which I hope to be able, at different times, to submit to the Society.

Cerebral Diseases.

Fracture of the skull and concussion of the brain.

Case xlvi.—*Fracture of the skull and of the ribs: much blood effused between the skull and dura mater.*

Thomas Davis, ætat. 38, a seaman, was brought by a Police Peon, to the General Hospital at 4 a, m. of the 16th May. It was stated that he had fallen from a window of the sailor's home, a height of 25 feet. On admission he was perfectly insensible; the pupils were dilated; the respiration stertorous and laboured; the pulse frequent and full, but compressible. There was slight bleeding from the left ear, but no apparent contusion of the scalp. He was bled to 6 ounces, when the pulse sank, and the vein ceased to bleed. On more minute examination, the anterior parts of the upper ribs on both sides were found to be fractured, and there was also subcutaneous emphysema, chiefly, on the left side between the nipple and the clavicle and ascending up the neck. He died at $6\frac{1}{2}$ a. m.

Inspection five hours after death. *Head.* Between the integuments and the pericranium, there was a layer of dark coloured blood effused. The coronal suture from side to side was forced open, and formed a fissure about a line in breadth. Just above the squamous suture on the left side, a fissured fracture in the parietal bone extended from the coronal suture, followed a curved line for about four inches, and passed into the occipital bone. From this fissured fracture others radiated, two towards the vertex, each about two inches long, and one downwards towards the temporal bone. There was no depression any where. On the inner surface of the left temporal bone, there were stellated fractures stretching across the base of the skull on that side.

For a space the size of the palm of the hand, and opposed to the coronal suture, the dura mater was separated from the bone by the space of three quarters of an inch, and that space was occupied by fluid, and coagulated blood. On the right hemisphere there were patches of extravasated blood resting on the pia mater. At the inferior surface of the middle lobe of that side, and also below the cerebellum, there was a considerable quantity, an ounce and a half, of fluid blood extravasated between the dura mater and arachnoid. The brain was healthy in structure.

Chest. The sternal end of the right clavicle was dislocated; all the true ribs on that side, were fractured close to their sternal junction. On the left side, the first and second ribs were fractured in different places; and between two of the fragments of the first rib the finger could be passed into the chest. The left lung was collapsed and there was a lacerated wound of the upper lobe, half an inch in length. In the left sac of the pleura there were about six ounces of fluid blood. The right lung adhered, throughout, to the costal pleura. The heart was healthy. The abdominal viscera were not particularly examined.

CASE XLVII.—*Extensive fracture of the upper part of the cranium with extravasation of blood on the surface and into the substance of the brain.*

Frederick Martin, ætat. 21, of the ship Asia, "*vespere*, 25th March, 1841." Is reported to have been found in the hold of the ship this morning at 4 A. M. lying on the ballast which consists of shingles. It is supposed that he must have fallen down into the hold a height of 15 feet about 8 P. M. of the previous night. Is reported to have been in a drowsy state since and occasionally delirious, and to have had leeches applied to his temples. There is ecchymosis and swelling of the eyelids of the left eye, with an œdematous boggy feeling of the scalp, chiefly however of the left side. He is drowsy, protrudes the tongue when asked, but does not answer questions. Tongue pretty clean; pulse 80, full; skin above natural temperature. He was bled and leeched and purgatives were given. At 10 P. M. the breathing was oppressed and he died at 5 A. M. of the 26th.

Inspection ten hours after death. *Head.* A considerable quantity of dark coloured blood was extravasated between the scalp and the cranium, chiefly on the anterior part and left side of the head. The sagittal suture, for half its length, was forced open and a fracture extended through the frontal bone to the left of the mesial line, gaping, throughout, to the extent of the sixth of an inch. This fracture extended to the orbit, thence through the orbital plate to the junction with the sphenoid bone. There

was blood extravasated between the skull and the dura mater, and also between the layers of the arachnoid. In the anterior part of the left hemisphere, just over the orbit, there was a dark clot of blood, the size of a walnut, which had broken down the cerebral substance and formed a cavity for itself.

Chest. The lungs were emphysematous.

Abdomen. The small intestines were laid open with the view of observing the contents which were abundant, thin mucus; in the greater extent tinged and intermixed with bile, where the intermixture was greatest, there, I think, the adhesiveness was least. The stomach was empty.

CASE XLVIII.—*Extensive fracture of the skull and extravasation of blood on the surface and into the substance of the brain. Coma coming on gradually.*

W. P. ætat. 26, was thrown from a buggy and pitched upon his head, and was brought to the European General Hospital shortly after the accident at 1 P. M. of the 8th November 1841. On the left side of the frontal bone there was commencing tumefaction but without discoloration, and over the occipital bone there was a small wound. The pupils were dilated. His manner was excited and there were intervals of drowsiness. The pulse was feeble and the skin coldish, and on two occasions a small quantity of blood was vomited. After a short time 60 leeches were applied to the temples, and as the pulse rose ʒ xviii of blood were taken from the arm. The head was partially shaved and cold cloths were applied and a purgative enema exhibited.

At 9 P. M. he had become insensible and the pupils continued dilated. Pulse 80, sharper and fuller; skin above the natural temperature; the bowels not opened. The urine was drawn off by the catheter. Some more leeches were applied to the temples, and croton oil was exhibited. He continued to lose ground; coma complete; breathing oppressed; and he died at 4 A. M. of the 9th, about thirteen hours after the accident.

Inspection 9 hours after death. *Head.* Underneath the integuments over the left side of the frontal bone, there was considerable extravasation of blood. The calvarium throughout its great extent was thin and diaphanous. A little to the left of the mesial line commencing above the frontal sinus, there extended a vertical fracture throughout the whole length of the frontal bone and part of the parietal bone and passing into the saggittal suture; the length of the fracture was about four inches, gaping in parts to the extent of the eighth of an inch. Near the level of the protuberance of the occiput, a fracture commenced in the

site of the lambdoidal suture of the right side, following the line of the suture to the foramen magnum.

Over the anterior and upper part of the convexity of both hemispheres beneath the dura mater, extensive coagula of dark coloured blood were extravasated; there were also considerable coagula over the orbital plates, below the anterior and middle lobes of the brain. In parts of the anterior lobes the substance of the brain was broken down, and small coagula of blood were extravasated. The fracture in the frontal bone passed across some of the ramifications of the meningeal arteries, where furrowing the bone.

CASE XLIX.—*Extensive fracture of the skull with extravasation of blood on the surface of the brain. Fracture also of the right scapula.*

John Nelson, ætat. about 39. Seaman H. C. Brig Tigris. At 8 A. M. of the 25th May, 1842, was brought to the General Hospital, having fallen from an upper window about half an hour before. On admission he was in a state of insensibility; the pupils were dilated; the right eyelid was swollen and ecchymosed; the skin was of natural temperature; the pulse was easily compressed. There was no fracture or displacement of any bone detectable on superficial examination. The head was shaved and cold applied. At 10 A. M. he was much in the same state, at times muttering to himself; the breathing was somewhat hurried; the pulse slow and compressible, and he had vomited some blood; there was slight tumefaction over the right parietal bone; cold affusion was used to the head without any good effect, and afterwards 35 leeches were applied to the temples. At noon the breathing was stertorous, and the pulse was firmer and fuller and the coma continued. He was bled to ℥xii. the cold applications were continued and a turpentine enema exhibited. The tumefaction over the right parietal bone increased; the breathing became more oppressed and stertorous; the skin became moist; the pulse lost strength; he died at 2 A. M. of the 25th.

Inspection ten hours after death. There was no laceration or abrasion of the scalp, but swelling over the right parietal bone and two slight abrasions, one at the top, the other at the back part, of the right shoulder. No other external injury.

Head. Between the scalp and the bone over the right temporal and parietal bones, there was considerable extravasation of blood. From a little in front of the protuberance of the parietal bone, a fracture extended to nearly the coronal suture, thence it extended vertically downwards at

right angles, passing through the squamous suture and the squamous portion of the temporal bone to the level of the zygomatic arch; thence radiating to the base of the skull under the anterior part of the middle lobe of the brain. The great part of the squamous portion of the temporal bone was depressed about an eighth of an inch, and lower down the fractured fragments were loose and easily detached. Between the dura mater and the fractured part of the skull, there was a large quantity of dark coagulated blood, and the brain at that site was, in consequence, depressed and flattened; the substance of the brain was uninjured. The calvarium was throughout thinner than is usual, but to no very marked extent.

Chest. Old adhesions of the pleura; otherwise viscera healthy.

Abdomen. The colon was distended with air; the stomach was very nearly empty; the mucous coat was dark grey, and rather soft towards the cardiac end, apparently however from putrefaction having commenced.

The right scapula was fractured in several places, comminuted in the part of the bone above its spine; and there was a transverse fracture below the spine, close to it, and extending almost entirely across the scapula commencing at the base.

CASE L.—*Fissured fracture of the occipital bone and base of the skull; effused blood general on the surface of the brain; caused by a fall from the main yard on deck.*

Peter Mc'Allen, ætat. 30, seaman of the ship Eucles, was brought to the European General Hospital at 5 P. M. of the 22d December 1842; said to have fallen two hours previously from the main yard of the ship on the deck, pitching on the left side. He was taken up in a state of insensibility, bleeding from the right ear. At the time of the accident, he was bled at the arm to the extent of six ounces. On admission he was quite comatose with stertorous and convulsive respiration and tracheal rale. Pulse very compressible and sinking; skin coldish. There was a slight contusion over the left eye-brow, but no further injury of the head was apparent. No fracture of the ribs or bones of the extremities was detected on cursory examination. Sinapisms were applied to the feet, and cold applications to the head. At $6\frac{1}{2}$ P. M. there was reaction; the skin above natural temperature; the pulse fuller and firmer; the coma and stertor continued. 48 leeches were applied to the temples; a turpentine enema exhibited, and the cold applications to the head were continued. He died about $7\frac{1}{4}$ P. M.

Inspection fifteen hours after death. *Head.* On the left side of the occipital bone about the level of the protuberance, there was a fissured frac-

ture which extended downwards to the left side of the base of the skull. Over the entire surface of the brain, superior surface, and base, there was a thin layer of blood effused, apparently, external to the arachnoid membrane and seeming to proceed from the right lateral sinus. The brain was healthy in substance.

Chest. The 2nd rib of the left side was fractured. No other fractures.

CASE LI.—*Concussion of the brain, lacerated wound of the scalp, no fracture of the skull or extravasation of blood in the head. Fracture of the sternum, extravasation of blood into the anterior mediastinum, making pressure on the lower part of trachea.*

Archibald ——— ætat. 42, Chief Officer of the ship Carnatic, was brought to Hospital at 1 P. M. of the 21st March 1842. It was stated that he had fallen from the deck to the bottom of the hold of the vessel, a height of about 19 feet, and had pitched upon his head. On the vertex, there was an extensive stellated lacerated wound, exposing the bone and surrounded by considerable extravasation of blood. The pupils were dilated; the pulse was of moderate strength; and there was present a state of low delirium. He had been bled from the arm to a small extent before admission. The wounds were dressed and cold cloths applied to the head. He died about two hours and a half after admission into hospital.

Inspection fifteen hours after death. *Head.* Over the vertex, there was an extensive lacerated and stellated wound exposing the bone; and between the bone and integument, for some distance round the wound, there was extravasation of a thin layer of dark blood. A good deal of blood oozed from the vessels on separating the calvarium from the dura mater. No blood extravasated on the surface, or into the substance, of the brain. There was slight effusion of serum on the upper surface between the arachnoid and pia mater, and a little more than the usual quantity of serum in the lateral ventricles. The substance of the brain was healthy and there was no fracture of any part of the skull.

Chest. Between the 2nd and 3rd ribs, the sternum was fractured across, and a good deal of dark blood was extravasated into the cellular tissue of the anterior mediastinum, making pressure on the lower part of trachea. The lungs did not collapse and were œdematous posteriorly; there was no effusion into either sac of the pleura. The pericardium, the heart, and great vessels, were uninjured.

The abdominal viscera presented no external marks of injury or disease and there was no effusion into the cavity. The stomach contained

a small quantity of half digested food, and the mucous coat was healthy. There was a fracture of the left scapula.

CASE LII.—*Concussion of the brain; vessels of the pia mater turgid; serous effusion between the pia mater and arachnoid membrane.*

William Parry, ætat. 28, seaman. Whilst the ship was in dock, he fell from the deck into the dock, a height of about thirty feet. The bottom of the dock was muddy, and this seaman was immediately after his fall, found in a state of insensibility, with his face immersed in the mud. He continued insensible for some time, and was brought to the hospital at midnight of the 18th Sept. 1839, about two hours after the occurrence of the accident. When spoken to, he answered but not coherently, and there was an increasing tendency to drowsiness. There was no contusion of the scalp. There was an oblique simple fracture at the middle of the bones of the right leg. He was bled, but the pulse sank rapidly under the detraction of blood. The respiration became hurried and the pulse frequent; he passed into coma and died at 2 A. M.

Inspection six hours after death. Body stout. There were livid sugillations on the posterior part of the trunk, but no bruise or contusion in addition to the fracture of the bones of the right leg.

Head. No contusion of the scalp or injury of the bones. On separating the calvarium from the membranes, much dark fluid blood flowed from the vessels. The vessels of the pia mater on the convex surface of the brain were very turgid with black blood, and there were extravasated streaks of blood here and there. There was also effusion of serum between the arachnoid and pia mater, and at the base of the skull to the extent of 2 ounces. There was no laceration of any part of the brain, or extravasation of blood, in addition to that already noted.

Chest. The lungs were * emphysematous and did not collapse. The heart was healthy. In the larynx close to the rima glottidis, were traces of the mud which must have been inspired, whilst he lay at the bottom of the dock.

* Throughout this series of cases, the term "emphysematous," has been used to express the fact, that on opening the cavity of the chest the lungs did not collapse. This use of the term is certainly not strictly correct, and I observe that at page 519 of the 7th volume of the British and Foreign Medical Review, it is proposed to use the word "inflation," to express the fact—I have thought it better to leave the term used in the original report and to offer this explanation of the sense in which it is applied.

Abdomen. The viscera, with the exception of the kidneys, were healthy and these had partially undergone the yellow degeneration. The mucous coat of the stomach was healthy with the mucous glands very distinct. It contained some undigested meat intermixed with dark looking matter, probably the mud of the dock which had been swallowed whilst he struggled at the bottom.

Apoplexy.

CASE LIII.—*Apoplexy with sanguineous and serous effusion.*

William Johnston, ætat. 35, a pensioner of slender frame, sallow complexion and of very intemperate habits, was on the afternoon of the 17th April 1839, admitted into the General Hospital in an apoplectic state. There was frequent convulsive twitching of the mouth; the respiration was hurried; the pulse 100 and small; and the pupils contracted. A vein was opened in the arm, but as the pulse sank rapidly under the flow of blood it was again tied up. Leeches were applied to the temples; he was cupped on the back of the neck; a purgative enema was exhibited and sinapisms were applied to the feet. He died at 6 P. M.

**Inspection* sixteen hours after death. *Head.* On the surface of the pia mater of the anterior portion of the middle lobe of the left hemisphere, there was a clot of coagulated blood; and underneath it, the substance of the brain was of a deep red colour, and softer than natural; there was also a considerable quantity of fluid blood effused over the pia mater, where it covers the posterior portion of the brain; and there was extensive effusion of serum into the ventricles and at the base of the skull.

Chest. The heart was in a state of atrophy and of a pale colour. The lungs posteriorly were extensively infiltrated with blood.

Abdomen. The liver was of a pale buff colour. The other viscera were not examined.

CASE LIV.—*Simple apoplexy; congestion of the vessels of the membranes of the brain.*

Andrew Thompson, ætat. 20, steward of the ship Chusan, was admitted into the European General Hospital on the evening of the 4th November 1841. It was stated that he had been found, after trifling ail-

* I saw the patient before death, but was not present at the inspection. This report is extracted from Dr. Bird's statement.

ment on board ship, on the evening of 2d instant, in a state of insensibility. He was then largely bled from the arm and by leeches, and a blister was applied to the nucha. He had continued, and was, on admission, in a state of complete coma; the conjunctiva of the eyes was vascular, and though the pupils, partially answered the stimulus of light, they were contracted. The pulse was 120, slightly irritable, and very easily compressed; the skin was covered with moisture; the abdomen collapsed and supple; the respiration regular and not oppressed. Is said to have been subject to convulsive fits. The head was shaved, a blister was applied to the scalp and sinapisms to the feet. On the morning of the 5th, the coma continued; there was constant agitated movement of the arms or legs; the pulse was 130 and feeble; the skin was hot; and the urine was passed involuntarily in bed. At the evening visit there was less drowsiness, and the tongue was for the first time protruded when he was desired to do so, it was white and furred. The eyes continued vascular and the expression very vacant, and the features collapsed; pulse rapid and feeble; skin coldish; abdomen collapsed; there was constant tossing movement of the arms and flexion and extension of the legs. Chicken soup, wine and sago were given; but he continued to sink and died on the morning of the 6th.

Inspection ten hours after death. *Head.* The vessels of the pia mater and of the choroid plexus were considerably congested, even to their minute ramifications. On slicing the substance of the brain, there appeared a greater number of bloody points than is usual, but there was, in no part, softening or other disorganization.

The viscera of the chest and abdomen were healthy.

Case lv.—*Simple apoplexy; slight congestion of the vessels of the membranes of the brain; no increased serous effusion.*

David Grey, ætat. 30, carpenter of the ship Harmony, a man of full habit, was brought to the European General Hospital at 3 p. m. of the 25th June 1843. It was reported that he had been ailing on board for two or three days previously with slight febrile symptoms, for which some remedies had been used; that on the early part of the day of admission he had been somewhat delirious, and that while near the hospital had been seized with a convulsive fit followed by coma. On admission he was completely comatose with contracted pupils and slight stertor; the pulse was frequent, moderate and easily compressed. The head was shaved and cold affusion used, he was cupped on the nucha to ℥x. and 48 leeches were

applied on the temples and a turpentine enema exhibited. The stertor increased, the breathing became oppressed and the surface of the body pungently hot, and he died at 7 P. M.

Inspection of the head twelve hours after death. There was very slight congestion of the vessels of the membranes; there was no increased effusion of serum into the ventricles, or on the surface of the brain; there was about an ounce of serum at the base of the skull.

CASE LVI.—*Serous apoplexy after excesses in drinking, considerable serous effusion between the arachnoid and pia mater and at the base of the skull.*

Mr.———, Commander of the Ship———, ætat. 36, was admitted into the General Hospital, on the 20th May 1839. The skin was cold, the pulse feeble; there was drowsiness with flushed countenance and suffused eyes. It was reported, that he had just returned from sea, and it was supposed that he had been drinking to great excess. The head was shaved and a blister was directed to be applied to the nucha. Shortly afterwards, he became affected with vomiting, attended with cramps of the extremities; the skin was cold and damp, and the pulse thready. A sinapism was applied to the abdomen and to the feet; and brandy with tinct opii. 3ss. was given, and the brandy was directed to be repeated. At 1 P. M. there had been no recurrence of vomiting, there had been no purging, but the cramps continued frequent, the thirst was great; the skin cold and damp; the pulse imperceptible; the eye sunken, and respiration laboured. Without having become comatose, he died at 1½ P. M.

Inspection four hours after death. Body stout. *Head.* On separating the calvarium from the dura mater, about six ounces of dark coloured fluid blood flowed from the vessels. The vessels of the pia mater were turgid and at the posterior part of the lobes the convolutions were veiled by abundant effusion of serum. There was serum also at the base of the skull and it flowed from the theca vertebralis.

Chest. The lungs were quite collapsed and the heart was healthy.

Abdomen. The liver was pale and considerably enlarged. The mucous coat of the cardiac end of the stomach was of crimson tint, but was not softened; that of the body of the stomach was mammillated and thickened. The end of the ileum was laid open, its contents were dark green and tarry; the mucous glands were enlarged and distinct. The transverse colon contained yellow coloured fluid; the follicles were distinct but

their orifices not evident. There was no enlargement of the mesenteric glands. The kidneys were healthy.

Remark. In ignorance of the early history of this case, the question arises, was it a case of Cholera of which there were instances at the time occurring in the harbour; or was it delirium tremens, or serous apoplexy, the consequence of the excesses in drinking to which he was known to have been addicted. From the nature of the contents of the end of the ileum I gave it as my opinion that he did not die of Cholera.

CASE LVII.—*Serous apoplexy after exposure to the sun in a man of intemperate habits; serous effusion in the head and opacity of the arachnoid. Commencing disease of the kidneys.*

J. E. W. the Chief Officer of a ship, was admitted into hospital at 9 P. M. of the 12th August, in a state of perfect coma; the breathing was stertorous and there was convulsive agitation of the arms and legs; the pulse frequent and small; and the skin above the natural temperature. He died about 2 hours after admission. It was stated that he had been seized with a fit at 2 P. M. and had been bled to ℥xx. at 7 P. M.

Inspection eight hours after death. The body was of moderate stoutness. From between the dura mater and arachnoid membrane, serum escaped; there was also a thin veil of serum between the arachnoid and pia mater at the depending parts of the posterior lobes; and a greater than natural opacity and thickening of the pia mater and arachnoid on the convex surface of the brain. There was no great congestion of the vessels of the membranes, but there were numerous bloody points observable on incising the brain; and there was about one ounce and a half of serum at the base of the skull.

Chest. The posterior part, and chiefly the lower lobes of the lungs, were œdematous and gave out much frothy serum when incised; the heart was healthy.

Abdomen. The contents of the stomach consisted of half a pint of brown turbid fluid, in which undigested portions of meat and vegetables floated. The mucous coat, greyish in colour and sound in texture. The liver was healthy. The cortical part of the left kidney was of deep chocolate red colour, with buff streaks. The cortical part of the right kidney was of yellowish tint with red striæ. The bladder was moderately distended with urine. The other viscera presented nothing worthy of note and were not minutely examined.

At the Inquest held on the body of this individual, it appeared that his habits were intemperate, that he had been drinking to excess and exposing himself to the sun, and had been seized with convulsions which terminated in coma.

CASE LVIII. — *Apoplexy after free drinking, two ounces of serum at the base of the skull and a thin veil of serum over the convex surface of the brain.*

William Williams, ætat. 30, a seaman, was brought to the General Hospital at 10 P. M. of the 17th May 1842, in a state of insensibility. It was stated by his comrade who accompanied him, that he had been living on shore for some days and drinking to excess, but to no great extent on the day of his admission. The head was shaved, cold affusion, and purgative enemata were used. In the course of the night there were several convulsive fits and on the morning of the 18th he was in a state of complete coma with stertorous breathing, and inability to swallow; the pulse frequent and small, and the skin pungently hot. The cold applications were continued and a blister was applied to the nucha. At noon the coma was not so profound; the pulse was somewhat more developed; and the skin was not so pungently hot. A purgative enema with oil of turpentine was directed to be exhibited. The scalp was washed with diluted acetic acid and a large blister was applied. At the evening visit the drowsiness was somewhat less, but the pupils were very dilated, the pulse continued frequent and small, and the pungent heat of skin had recurred. On the morning of the 19th he continued much in the same state, with exception that the skin was cooler and the pulse still feebler. At the evening visit the pulse had still lost strength; there was present muttering delirium, and he died at midnight.

Inspection seven hours after death. The body was stout.

Head. Over the convex surface of the brain there was a thin veil of serum and there were two ounces of a similar fluid effused at the base of the skull, but there was no increased quantity in the lateral ventricles.

Chest. The viscera were healthy.

Abdomen. The colon was much distended with flatus, and the stomach was contracted. The liver small, adhered to the abdominal parietes and presented an irregular and puckered surface, but the structure of the organ was tolerably healthy. The omentum was loaded with fat. The kidneys were healthy.

CASE LIX.—*Apoplexy from drinking, in a man of very dissipated habits; slight congestion of the vessels; no increased serous effusion.*

James Mann, ætat. 33, seaman of the ship United Kingdom, was found on the road in a state of intoxication with a superficial wound over the right parietal bone, and was brought to the General Hospital on the 17th May, 1842. He was discharged cured on the 2d June; was re-admitted on the evening of the 6th June, suffering from the effects of a debauch and was discharged on the 8th. On the 27th June he was found on the road in a state of coma and brought to the hospital, and died about an hour after admission.

Inspection sixteen hours after death. Livid sugillations were observed about the arms and the posterior part of the trunk, but no marks of contusions or bruises any where.

Head. There was slight congestion of the vessels of the pia mater but no increased effusion of serum in the ventricles or on the convex surface of the brain. There was about an ounce of serum at the base of the skull and rather more than the usual number of bloody points were visible on incising the brain.

Chest. Old adhesions of the pleura of both sides. The lungs and heart were healthy.

Abdomen. Liver of palish grey colour but tolerably healthy in texture. In the stomach there were about 8 ounces of reddish fluid without perceptible spirituous odour. The mucous coat of the cardiac end of the stomach was of a reddish colour and was somewhat softened in texture but not pulpy. The other viscera appeared healthy.

CASE. LX.—*Amentia. General torpor; the vessels of the pia mater very turgid with blood; about one ounce and a half of serum at the base of the skull.*

A Midshipman of the Indian Navy, ætat. 24, of stout frame and florid complexion and who at different times was reported to have lived freely, was, after exposure to the weather and to the heat of the sun, whilst in the active discharge of his duties, affected with constipation, indigestion, headache, and slight febrile symptoms. Under the use of mercurial purgatives his health was improved, but the bowels continued disordered and he complained of determination of blood to the head. On the 6th April 1839,

a marked change of manner was observable, he did not acknowledge his friends, he refused to answer questions, and he sat with a vacant downcast expression of countenance. On the 7th, the pulse being 98 and full, the countenance flushed, and the pupils dilated, he was bled to 16 ounces, and had the head shaved, 6 dozen of leeches applied, and gr. 15 of calomel exhibited, and then was sent to the General Hospital. He was found sitting with a fatuous expression of countenance and gave no answer to the questions addressed to him. As the pulse continued full and firm, he was again bled, and the fulness and firmness of the pulse were reduced after the loss of 16 ounces of blood; a cathartic draught was ordered which he would not take, and a purgative enema was in consequence exhibited; a blister was applied to the back of the neck; a drop of croton oil ordered, and to be repeated after three hours unless the bowels were previously freely moved. From the 8th to the 13th the symptoms varied little and were as follows:—there was little sleep, but no restlessness; the expression of countenance was heavy and vacant; he did not answer questions, but seemed to apprehend what was said; when asked he tried to protrude the tongue, but was unable to open the mouth for more than half an inch, never protruded more than the tip of the tongue and then retracted it quickly; took no food, drink, or medicine, probably from inability to swallow it, for when put into the mouth it trickled out at its angles; skin generally cool; the pulse ranged from 80 to 100 and was soft; the bowels were kept free by enemata; the urine was passed freely and frequently in bed; the tongue was not furred. The treatment consisted in the use of purgative and turpentine enemata; the tepid bath with cold affusion to the head; the blistered surface on the back of the neck was dressed with an ointment containing muriate of morphia; and latterly enemata of chicken soup were exhibited. On the 12th, the pulse had lost much of its strength, and on the evening of the 13th it was feeble and unsteady; there was slight heat of skin and for the first time he answered some questions in a feeble voice and complained of general pain. Early on the morning of the 16th after having rested quietly during the night, he was reported to have passed a copious evacuation in bed, and to have died immediately afterwards.

Inspection nine hours after death. *Head.* The vessels of the pia mater were very turgid with dark coloured blood all over the surface of the brain; and the substance of the brain when incised was dotted over with bloody points, but its texture was natural. There was no increased effusion in the ventricles, but there was about an ounce and a half of serum

at the base of the skull, and a thin layer between the arachnoid membrane and the pia mater on the convex surface of the brain.

Chest. The viscera were sound and not congested with blood.

Abdomen. The liver was dark coloured and the gall bladder turgid with bile. There were marbled red patches on the mucous coat of the stomach, but apparently from passive congestion. The kidneys and other abdominal viscera were healthy.

Delirium Tremens.

CASE LXI.—*Delirium tremens. Coma two hours before death. Six ounces of serum in the ventricles and at the base of the skull.*

A Seaman of stout habit, ætat. 34, formerly the mate of a ship, was brought to the General Hospital on the evening of the 21st May, after he had been drinking to excess for some time. On admission, his manner was restless, hurried and abrupt; the hands were tremulous but he was coherent in his replies. Tartar emetic solution with tincture of hyosciamus was given every second hour. He did not sleep, but on the morning of the 22nd he was more steady; the pulse was good; the skin warm, and the tongue slightly furred. Cold affusion was directed to be used, and to be repeated at noon; and the antimonial solution with tincture of hyosciamus was continued, and four ounces of wine were directed to be given. At the evening visit there was much starting of the arms, but he was quite coherent; ℞ colomel gr. iv. opii gr. ii. tart. antimon. gr $\frac{1}{4}$ at bed time. He was restless all night, walking about and talking incoherently and on the morning of the 23rd, he continued restless and labouring under illusions relative to his profession; pulse frequent and soft. The cold affusion was directed; the antimonial solution and tincture of hyosciamus were continued every hour, and an ounce of brandy was directed to be given every second hour. He continued restless and delirious, and made several attempts to escape, till about 1 P. M. when he passed copious watery feculent evacuations, involuntarily, and became comatose. At 2 P M. the skin was pungently hot; the pulse rapid, and feeble; the coma complete and attended with stertorous and oppressed breathing: he died at 3 P. M.

Inspection fifteen hours after death. The body stout.

Head. There was no congestion of the vessels of the pia mater. The convolutions of the convex surface of the brain were veiled by serous effusion, and the arachnoid membrane was milky and thickened. There

were about three ounces of serum in the lateral ventricles and the communication between them was free and open; at the base of the skull, there were also about three ounces of serum.

Chest. The lungs were emphysematous and did not collapse. The heart was healthy and empty.

Abdomen. The abdominal viscera were loaded with fat. There was a small inguinal omental hernia on the left side; the omentum adhered firmly to the inner ring and thus prevented the entrance of any portion of the gut into the sac. The cardiac end of the mucous coat of the stomach presented dark red extravasated patches, but its texture was nearly natural; the other viscera were not particularly examined.

CASE LXII.—*Delirium tremens. Delirium passing into coma; no increased turgescence of the vessels of the brain; about two ounces of serum in the cavity of the cranium.*

John———, ætat. 58. Captain of the ship———, applied at the hospital on the night of the 8th April 1841 for admission. He stated that he had just arrived from sea, that he suffered from constant sense of numbness of the fore part of the lower extremities commencing at the crest of the os ilium and extending to the feet. There was no tumefaction or deficiency of muscular power and no pain of the loins. On the morning of the 9th the hands and tongue were tremulous, but he was quite rational. At the evening visit he was very tremulous, he took four grains of blue pill, and two of opium at bed time. He did not sleep, and on the 10th the tremors continued, without delirium; and the sense of numbness of the legs was less complained of. He took camphor mixture with spirit. æther. nit. repeatedly during the day; also six ounces of wine. Towards evening he became wandering and delirious. The skin was cold and the pulse feeble. The head was shaved and a blister was applied to the nucha; grains four of blue pill and gr. iss. of muriate of morphia were given at bed time. The night was passed without sleep; on the morning of the 11th he answered questions rationally; the tongue was less furred; the skin was cool and the pulse 80, soft and feeble; urine scanty. Effervescing draughts with spirit. æther. nit. ʒi. Brandy ʒiii. tinct. opii. min. xv. were given every second hour. At the evening visit the tremors continued and he rambled in his replies to questions; he was ordered port wine ʒiss every second hour, for three doses; then opium grs. ii every second hour for three doses. He did not sleep but was

troublesome during the night. On the morning of the 12th, he continued tremulous and wandering; the pupils were more contracted; pulse feeble; skin of good temperature. The cold affusion was ordered and afterwards mist. antimon. ℥iss. and tinct opii ℥iii. and should he not sleep in two hours, the cold affusion to be repeated and followed by mist. antimon. ℥iss. and tinct. opii ℥ii. The affusion was twice used and the draught twice given, there was no sleep. At noon, he was constantly agitated and starting from his cot; pupils more contracted; scalp hot; pulse 120, feeble; constant muttering; urine scanty. Cold cloths were ordered to the head; camphor mixture ℥iss. spirit. æther. nit. ℥i. tinct. cantharidis min. x. every second hour. At the evening visit he was more drowsy with tremulous agitated movement of the hands and rolling of the tongue within the lips; pupils more contracted; skin above the natural temperature and dry; pulse 128, better developed; 8 ounces of clear urine had been passed, not involuntarily. A blister was ordered to the scalp; sponging of the surface of the body whilst the temperature was increased; and the draughts of mist. camphor. spirit. æther. nit. and tinct. cantharidis were continued with the addition of ℥iv. of antimonial mixture. He became more drowsy; the breathing became oppressed; the tremulous agitation of the hands and the twitching of the muscles of the face continued; and he died at midnight.

Inspection six hours after death. *Head.* There was no increased turgescence of the vessels of the membranes, but considerable effusion of serum at the depending parts, underneath the arachnoid membrane; about three drachms in the lateral ventricles, and an ounce and a half at the base of the skull.

Chest. Thoracic viscera healthy.

Abdomen. The small intestines were in a great measure covered by the colon; the ascending colon was contracted; the transverse dilated; the descending colon was contracted; then the sigmoid flexure distended reached across the abdomen almost to the cæcum. About two feet from the end of the ileum, there was a cæcal appendage standing at right angles from the free side of the gut, about three inches long and of diameter equal to that of the gut; the mucous coat that lined it, was perfect. The liver rather enlarged was of pale buff colour. The mucous coat of the cardiac end of the stomach was marbled dark red but the texture of the coat was healthy. Kidneys healthy.

CASE LXIII.—*Delirium tremens; moderate turgescence of the vessels of the membranes; serous effusion in the cranium; liver mottled buff.*

——Whitfield, ætat. 38, a Boiler maker who had been at different times in Hospital ill with bowel complaint. He was a stout man of intemperate habits, and was admitted with delirium tremens after excess on the 18th May 1840. It was chiefly marked by tremors of the hands and tongue and want of sleep, but no delirium. He had calomel with opium or muriate of morphia, and he seemed to be improving. On the night of the 19th he had 8 grains of calomel and muriate of morphia grs. iss; was reported to have been slightly delirious and was found comatose at $3\frac{1}{2}$ A. M. of the 20th; and died shortly afterwards.

Inspection. Head. Turgescence of the vessels of the membranes was moderate; the substance of the brain when incised shewed bloody points; there was a thin veil of serum on the convex surface of the brain and about an ounce at the base of the skull.

Chest. The lungs did not collapse; the anterior part was emphysematous and the posterior congested with dark coloured blood. Heart healthy.

Abdomen. The liver, enlarged, filled the epigastrium and part of the left hypochondrium, and was very pale in colour and mottled buff. The mucous coat of the stomach was of leaden grey colour, and marbled red at the cardiac end; the texture of the tunic was natural. The intestines distended with gas, were natural. The kidneys were smaller and more lobulated than natural; the cortical part was natural, but the fat seemed to pass from the concave surface and, in a layer of two lines thickness, occupied the spaces between the calices, and seemed to encroach much on the tubular portion.

CASE LXIV.—*Delirium tremens fatal by convulsion and coma; bullæ of air in the vessels of the membranes of the brain; mucous glands at the end of the ileum distinct.*

James Alexander, ætat. 28, 2nd class Engineer, a stout man who had been two months in Bombay, and had been leading a most intemperate life, was admitted into hospital on the 19th September 1840. His countenance was flushed; conjunctiva vascular; tongue and hands tremulous. Brandy was given; cold affusion was used to the head; and tinct. opii. ʒiss. given at bed time: no sleep. On the 20th, antimonial mixture with tincture of hyosciamus and tinct. muriat. morph. ā ʒss. every two hours.

no sleep. Calomel gr. iv morphiæ muriat. gr. i. h. s. 21st, no sleep; manner more hurried; for the first time, slight incoherence; pulse and skin good. Cold affusion, antimonial mixture ℥ iss. Tinct. opii ℥iiss. no sleep. After two hours, antimonial mixture ℥i. Tinct. opii. ℥i. *Vesp.* no sleep; more incoherence; pulse moderate, effervescing draught and brandy for 3 doses, then affusion followed by antimonial mixture ℥iss. tinct. opii. ℥iii, and after two hours, again affusion and tinct opii. ℥iss, if no sleep.

11½ P. M. no sleep; more incoherence; pulse rapid, and feeble. A blister was ordered to the nucha, antimonial mixture with tinct. hyosciam. tinct. muriat. morph. á ℥i every two hours for four doses. After two doses, whilst walking about was seized with a convulsive fit which lasted for five minutes; was followed by coma, fixed eyes, commencing stertor; rapid thready pulse; hot pungent skin. He died at 3 A. M. about an hour and a half after the convulsion.

Inspection five hours after death. *Head* The vessels of the membranes were not turgid with blood, but contained many bullæ of air; there were also numerous small bullæ in the cells between the arachnoid and pia mater, this chiefly on the convex surface of the hemispheres. There was a thin veil of serum between the arachnoid membrane and pia mater at the depending part of the hemispheres. On incising the brain, there were more than the usual bloody points on the surface of the incised parts. At the base of the skull there were two ounces of serum; and about two drachms in each lateral ventricle.

Chest. The liver forced up by the distended colon, reached the upper part of the fifth rib. The posterior part of the lungs was congested. The heart was healthy.

Abdomen. The liver pale externally was tolerably healthy in texture. The stomach contained what had been eaten for dinner partially digested; the mucous coat was much mammillated towards the pyloric end; and towards the cardiac portion, there were small patches of dotted redness, but the texture of the coat was healthy. The end of the ileum and large intestine were laid open. The isolated mucous glands at the end of the ileum were numerous, white and prominent, about the size of a mustard seed, and there were three or four ulcers, the size of a split pea, in course of cicatrization. The follicles in the colon were distinct throughout, but the tunic was sound in texture, and there were no traces of ulceration; towards the end it contained healthy feculence.

The kidneys were healthy.

CASE LXV.—*Delirium tremens; slight serous effusion in the head; traces of former inflammatory action in the mucous coat of the stomach.*

Benjamin ———, Lieut.——Regt N. I., was brought to the European General Hospital, at noon of the 12th September 1841, in a state of delirium tremens; the tremors were excessive; he talked incoherently; the pulse was frequent and soft; the tongue slimy in the centre. He was of full habit of body and the right eyelids were swollen and ecchymosed from a contusion. Three ounces of brandy with water were given and followed by the use of the cold affusion, and then an ounce of camphor mixture with grain ½ of tartar emetic, and ʒiii of tincture of opium was given and repeated after two hours. No sleep; he was constantly rambling and labouring under illusions; there were constant agitated movements of the arms and legs, with occasional rigid spasm; the pulse was rapid and feeble, and the pupils contracted; the tongue coated in the centre and florid at the tip. The head was shaved, cold affusion was again used, a purgative enema was exhibited, a blister was applied to the nucha and calomel grains x were given, then camphor mixture and spirit. ammon. aromat. every second hour. At 9 P. M. it is reported that he had continued troublesome till about 7 o'clock when he fell asleep and continued so with agitated movements of the hands and fingers; the pulse was frequent and small; the skin above the natural temperature; the bowels had not been opened by the enema. He died at 1. A. M. of the 13th.

Inspection six hours after death. Body stout.

Head. The convex surface of the brain was veiled by a thin layer of serum effused between the arachnoid membrane and pia mater; and there was about half an ounce of serum at the base of the skull.

Chest. The lungs did not collapse freely, but were without congestion of blood or serum. The heart healthy, perhaps rather small.

Abdomen. The right lobe of the liver was somewhat enlarged and the left rather small; the external surface was rather irregular from buff coloured elevations, and the substance, when incised, was mottled buff. The stomach was empty; the pyloric end of the mucous membrane mammillated, the cardiac end dotted red and the tunic sound in texture. About the middle of the stomach, there were the traces of two cicatrized ulcers. Other viscera not particularly examined.

CASE LXVI.—*Delirium tremens treated with full doses of muriate of morphia; serous effusion in the head; softening of the mucous membrane of the cardiac end of the stomach.*

George Walker, ætat. 38, was admitted into the European General Hospital on the 14th September 1841, with tremulous hands and tongue; no complaint of head; bowels constipated; tongue white. He stated that he had ailed for a week past with want of appetite and occasional vomiting. Some wine and sago were given, a purgative enema exhibited, and some blue pill with a grain of muriate of morphia was given at bed time. His bowels were freely moved by the enema; there was no vomiting during the night and he said that he had slept for some hours; but on the morning of the 15th he was still tremulous, and the tongue was white but not coated. He was ordered sago with two ounces of port wine for breakfast and dinner; a sinapism was applied to the epigastrium, and he was directed to take an effervescing draught with 3ii of brandy every third hour. At the evening visit he continued tremulous; there was slight heat of skin; the pulse was 112 and feeble. Sago and wine for supper and the pill as on the previous night at bed time. At 9½ P. M. it was reported that since 7 o'clock he had been labouring under illusions and trying to escape from hospital. He was tremulous and agitated, and fancied the presence of objects; the pulse was frequent and of moderate strength; there had been no recurrence of vomiting. An ounce and a half of brandy with water was given, followed by cold affusion, then grains iii. of blue pill, and grains 1½ of muriate of morphia were given, to be repeated every second hour, for three doses, if necessary, and an ounce of brandy with water to be given with each dose. All the medicines were taken, and on the morning of the 16th he continued tremulous, constantly talking, labouring under illusions, fancying objects present, and catching at them with his hands; the pupils were much contracted; the skin was soft; the pulse frequent and feeble; tongue white in the centre; and no recurrence of vomiting. Cold affusion was used to the head and at the same time a hot foot bath; afterwards, a blister to the nucha, and then every second hour camphor mixture with spirit. æther. nitric. and spirit. ammon. aromat. each 3i. arrowroot with an ounce of wine every third hour. At noon there was no improvement, and tinct. hyosciam. m. xl. were added to each draught. At the evening visit it was reported that the draught had been given five times, and the sago and wine thrice taken. No sleep; agitation, illusions, and contracted pupils continued; pulse 140, better developed. The cold affusion to the head and hot foot bath were repeated; antimonial mixture with tincture of muriate of morphia 3iii. ordered and

to be repeated with tinct. muriat. morph. 3i. every hour, for three doses. All the doses were given and at 9 P. M. he was quiet and seemed inclined to sleep; if not asleep at 11 P. M. tinct. muriat. morph. 3i. was directed to be given, and repeated once, after an hour. After the first draught he became quiet. On the morning of the 17th he was very drowsy with contracted pupils and breathing somewhat stertorous; pulse thready; skin coldish. He died at 9 A. M.

Inspection six hours after death. *Head.* There was a thin veil of serum between the convolutions, under the arachnoid membrane, on the convex surface of the brain. There was about an ounce of serum at the base of the skull. The substance of the brain was very firm and shewed rather more than the usual number of bloody points when sliced.

Thorax. Lungs and heart healthy.

Abdomen. The liver projected beyond the ribs. On the convex surface, were many bright yellow, but not elevated, patches; and the organ when incised felt hard under the scalpel, and shewed a surface of mottled yellow.

Stomach. The mucous coat of the cardiac end was dotted red, and very friable; that of the body and pyloric end was mammillated, thickened and somewhat softened. Other viscera not examined.

CASE LXVII.—*Delirium tremens treated with free opiates; moderate turgescence of the vessels of the membranes of the brain; serous effusion considerable.*

William McNeill, ætat. 39, was admitted into the European General Hospital on the 17th September 1841, in a tremulous state, affected with occasional vomiting and diarrhœa, and was reported to have been drinking to excess during the four previous days. He had wine and sago for supper, and effervescing draught with brandy, every second hour. He did not sleep and during the night vomited frequently, and on the morning of the 18th was very tremulous but quite collected; the skin and pulse soft, and the tongue moist. Some brandy and water were given, afterwards the cold affusion was used, followed by the exhibition of 3ii. of tincture of opium to be repeated every second hour for three doses if necessary, and a sinapism was applied to the epigastrium. He slept for two hours, after two doses of the laudanum, but at the evening visit the tremors were unabated and the vomiting continued to recur. The sinapism was re-ap-

plied, brandy and effervescing draughts were given, and at bed time cold affusion was again used, followed by tincture of opium in the same doses as before. He slept for several hours after one dose, but on the following morning (the 19th) the tremors continued, and the vomiting had recurred only once in the course of the night. Sago and port wine for breakfast and dinner. The sinapism was repeated and the effervescing draughts with brandy were given occasionally in the course of the day; the cold affusion was again used at bed time, followed by tincture of opium as on the preceding night. No sleep after two doses of the opiates, and on the morning of the 20th the tremors were still present; the pupils were somewhat contracted and the expression excited; there had been no recurrence of vomiting. Cold affusion was used, followed by tincture of opium 3iii. to be repeated every hour in 3i doses twice, if he did not sleep. At noon he continued troublesome; the skin was moist; the pulse was soft. Brandy and water were given, followed by cold affusion and then mist. antimon. ʒi. c tinct. opii. 3iv. was exhibited, to be repeated after two hours if necessary, with tinct. opii. 3i. Both doses were taken; no sleep was induced, and at the evening visit he was quieter but the tremors continued, and pupils were very contracted; the pulse 80. A blister was applied to the nucha, and the effervescing draughts with brandy were continued every second hour. He slept from 7 to 10 P.M. after which, he again became restless and excited, then comatose and died early on the morning of the 21st.

Inspection eight hours after death. The body was stout and there were purple sugillations on the posterior parts of the trunk.

Head. There was moderate turgescence of the vessels of the membranes of the convex surface, and there was serum effused at the depressions between the convolutions, beneath the arachnoid membrane. There was about an ounce of serum at the base of the skull.

Chest. The lungs and heart were healthy.

Abdomen. The intestines, chiefly the colon, were much distended with flatus. The stomach was contracted and the mucous coat of the cardiac end, was spotted dark red, but sound in texture. Liver quite healthy. The right kidney was rather congested.

CASE LXVIII.—*Death by coma. Delirium tremens following free drinking while convalescent from an attack of cholera; membranes of the brain vascular with opaque points here and there in the arachnoid.*

Charles Ellis, ætat. 32, was under treatment for spasmodic cholera in the General Hospital from the 26th to the 29th October 1842, and was

discharged on the latter day well, but weak. After drinking in the bazaar was re-admitted on the 2nd November, again complaining of looseness and pain of abdomen and affected with tremors. He was restless during the day, and at evening the skin was coldish and the pulse feeble. The head was shaved, and a blister was applied to the nucha, and wine and sago were given for supper. On the morning of the 3rd he was comatose and rapidly sinking. He died at 8 A. M.

Inspection seven hours after death. *Head.* There was moderate vascularity of the membranes of the brain, and in the arachnoid, opaque points were here and there deposited. There was also slight serous effusion between the arachnoid membrane and the pia mater on the convex surface of the brain.

Chest. Both lungs were connected to the costal pleura by old adhesions.

Abdomen. The viscera appeared healthy.

CASE LXIX. *Fever simulating delirium tremens and treated as such; pia mater very vascular with bullæ of air in the vessels and between the arachnoid membrane and pia mater.*

William———,ætat. 29, a Conductor in the Ordnance Department, of slight frame, and frequently affected with febrile attacks, in which the head was more or less affected. On the 11th May 1839, he was admitted into the General Hospital, suffering from diarrhœa, for which chalk mixture and calomel with opium were given. On the morning of the 13th (new moon) his skin was hot, he was excited, talked incoherently, and had been walking about the ward a great part of the night; pulse frequent; tongue rather furred in the centre. Cold affusion was used and antimonial mixture with tincture of hyosciamus was directed every two hours. At the evening visit the skin continued hot, and he had not been asleep. The cold affusion was repeated, and calomel gr. iv. tart. antimon. gr. $\frac{1}{4}$. opii. gr. ii. directed to be given at bed time and ol. ricini. ℥iv. the following morning. Towards midnight he became troublesome and excited and the scalp was hot. Cold lotion was applied to the scalp, and a blister to the nucha. About 5 A. M. of the 14th, he became comatose with sinking pulse and laboured respiration. Green coloured dejections were passed in bed. He died at 8 A. M.

Inspection five hours after death. Examination of the head was only permitted. The vessels of the pia mater were generally turgid with dark

coloured blood to their minute ramifications, and there were bullœ of air here and there in the vessels, and also between the pia mater and arachnoid membrane. The sinuses were also filled with blood which was coagulated in some of them. There was about half an ounce of serum in the ventricles, and an ounce at the base of the skull. The substance of the brain was natural, and did not present many bloody points.

CASE LXX.—*Remittent fever in a person of very intemperate habits, the symptoms in some respects resembling delirium tremens ; death by coma. Three ounces of serum at the base of the skull; mucous coat of the colon softened, with here and there red patches, with a mucous follicle in the centre of each discoloration; and softening of the mucous coat of the stomach.*

Thomas Chittenden, ætat. 34, an Engineer of the Steam Department, of intemperate habits and frequently in hospital, suffering from febrile attacks. He was admitted into the General Hospital on the 30th August 1839, and stated that for eight or nine days he had been affected with febrile symptoms attended with irritability of stomach. On admission he complained much of headache; the bowels were relaxed and the tongue yellow. 36 leeches were applied to the temples and calomel grs. vi. opii. and ipecacuanhæ á gr. i. were given. At the evening visit, it was reported, that he had vomited frequently and been affected with general tremors which continued; the tongue was tremulous and yellow; the abdomen was somewhat full and tender on pressure at the epigastrium and right ribs; there was much headache; the skin was covered with moisture and the pulse was compressible; the bowels had not been opened. A purgative enema was ordered; blisters were directed to the epigastrium and to the nucha, and calomel grs. x. c opii. grs. ii, were given at bed time. The blister acted well and on the morning of the 31st (full moon,) the headache was lessened; the pulse 90; and the tongue not so tremulous. He was ordered saline mixture with tartar emetic solution and tincture of hyosciamus. He slept for two hours during the day and his bowels were freely moved. During the night, there was no sleep; and on the morning of the 1st September, the tongue and hands were tremulous, the countenance flushed, and the pupils dilated; pulse 96. Cold affusion was ordered to the head, and saline mixture with tinct. hyosciamus 3ii. every second hour for three doses. At the evening visit he was still tremulous, his manner was startled, and he muttered to himself: the pulse was feeble and the skin moist ; one dark coloured dejection had been

passed. Cold affusion to the head. ℞. mist. camph. ℥iss. mist. antimon. ℥iv. tinct. hyosciam. ℥ii. every second hour till he sleeps; brandy one ounce every hour for three doses, and then every second hour: ℞. calomel gr. viii. opii. gr. i. h. s. The pills were taken; also four ounces of brandy and the draught three times; but he continued agitated; talking incoherently and tearing the dressings from the blister. At midnight there was constant inarticulate muttering; there was general agitation and spasmodic action of the muscles of the face; the pupils were dilated and insensible to light; the skin was hot; the pulse rapid and feeble. Cold affusion was directed to be used to the head every hour whilst the scalp continued hot; and cold lotion to be kept constantly applied; sinapisms were applied to the feet and the other remedies omitted. He became comatose and died at 6 A. M.

Inspection nine hours after death. The body stout, and the external surface tinged deeply yellow.

Head. The dura mater faintly tinged yellow; the vessels of the membranes were moderately congested. The convolutions on the convex surface of the depending parts of the hemispheres, were veiled with serum effused beneath the arachnoid membrane. There were between two and three ounces of serum at the base of the skull.

Chest. The lungs were emphysematous and only partially collapsed. The heart was healthy. The cavity of the chest was encroached on by the liver, which on the right side reached to the 4th rib and coursed obliquely across to the 7th rib on the left side.

Abdomen. Omentum loaded with fat. The liver weighed $7\frac{1}{2}$ pounds, was externally mottled chocolate and buff; when incised, of buff yellow colour partly mottled, softened, and admitting of the ready separation of the peritonal coat; the gall bladder contained about an ounce of thin bile. The mucous coat of the cardiac end of the stomach was of dark marbled red colour, somewhat thinned and somewhat softened; the pyloric end pale and mammillated. There was vascularity of the commencement of the mucous coat of the duodenum, but the texture was natural. The large intestine throughout was distended, and there was no thickening of its walls; the mucous coat throughout, was tinged yellow, was thinned, and generally softened; the mucous follicles were generally apparent but not prominent. Throughout the colon there were red patches, here and there, mostly the size of a split pea, some larger; in

the centre of many there was a mucous follicle, and in these places the mucous coat was thin, soft, and pulpy, and after its removal the cellular tissue underneath presented in some instances a vascular patch. The gut was filled with thin yellow feculence. The spleen was of natural size. The kidneys were nearly natural, perhaps commencing yellow degeneration of the cortical substance, evinced by buff streaks.

Meningitis chiefly occurring in fever.

CASE LXXI.—*Remittent fever. Death by convulsion and coma. Vascular congestion of the vessels of the pia mater; rosy tint of the substance of the brain; one ounce of serum at the base of the skull; heart dilated.*

Laurence Fearon, ætat. 37, an Engineer of the Steam Department, and of full habit. During the four months of his residence in Bombay, he had been several times in hospital ill with fever, attended with gastric irritability. He was admitted into hospital on the evening of the 2nd September 1839. having been ill with fever for about a week before admission. There was headache, with pain at the margin of the right false ribs; the bowels were relaxed; thirst great; skin soft, but above the natural temperature; pulse 108, full. He was directed to be bled to ℥xvi. the head to be shaved and cold cloths applied; a warm bath was ordered at bed time, and calomel grs. vi. opii. and ipecac. gr. i. On the morning of the 3rd, there was no headache, and the epigastric uneasiness was removed; the skin was covered with moisture and the bowels had not been moved. An ounce of castor oil was given. At the evening visit the pulse was 96; there was no local pain; the bowels had been moved and the evacuations were bilious. The warm bath was directed at bed time and grains 2 of quinine were ordered, to be taken early the following morning, and to be repeated every second hour for three doses. On the morning of the 4th, general uneasiness of the upper part of the head was complained of; the pulse was upwards of 100; urine scanty. The quinine was directed to be omitted and a draught of rhubarb and magnesia with colchicum wine to be given. At the evening visit the bowels had not been moved; at noon there had been rigors followed by pyrexia; the pulse was 116; the epigastrium was tender; the pupils were slightly dilated; there was some confusion of thought, and slight tremors of the muscles. A purgative enema was exhibited; 30 leeches were applied to the temples, and fifty to the hypochondrium; and a blister was applied between the scapulæ. At midnight he had a convulsive fit, and when seen, about twenty minutes after-

wards, he was found with dilated pupils, breathing heavily and passing into coma; the skin was covered with sweat; the pulse was full; the bowels had not been opened. He was cupped on the temples to ℥x. a purgative enema with ol. Terebinth. ℥iss. was exhibited. Calomel gr. xv. were given and after two hours haust. cathart. ℥iv. were directed to be given. About an hour afterwards, he was again much convulsed; the bowels had not been moved. A foot bath at temp. 110 was ordered, and a blister to the epigastrium. At 2 A. M. he had passed into perfect coma, with stertorous breathing and convulsive movement of the arms and legs; surface hot. He died at 1. P. M. of the 5th.

Inspection. Twenty three hours after death. Body stout.

Head. There was a general bright red blush of the smaller vascular ramifications of the pia mater. The medullary substance when incised, presented a pale rosy tint, and the cortical substance had also a reddish tint. There was about an ounce of serum at the base of the skull, but none elsewhere.

Chest. The lungs were emphysematous on their anterior aspect and old cellular adhesions connected them to the costal pleura; there was very little congestion of their posterior parts. The heart was about twice the size of the fist; all its cavities were dilated, but chiefly the left ventricle, the walls of which were perhaps less than natural in thickness; the muscular tissue of the heart was pale and flabby; there was a fibrinous polypus in the left ventricle, but the cavity was not distended with blood. The lining membrane of the commencement of the aorta had a deep rosy colour (imbibition) and the surface was roughened from firm cartilaginous deposit. The aortic valves and the auriculo-ventricular valves, were undiseased.

Abdomen. The stomach was dilated. The transverse diameter of the liver was considerably increased, so that it reached about two inches below the right false ribs, and extended to the left of the mesial line about four inches; it was tied to the diaphragm and sides by old cellular adhesions, was natural in texture but of greenish olive tint. The stomach contained about half a pint of dark green fluid; at the cardiac end, there was a dark red patch and the mucous coat was thinned and pulpy; elsewhere the coat was of natural thickness, of leaden grey colour, and generally somewhat softer that natural. The small intestines healthy in their tissues. At the end of the ileum the isolated glands, were prominent.

The mucous coat of the colon was of leaden grey tint, but of natural texture and the follicles not distinguishable. The spleen was considerably enlarged and softened. The kidneys were, chiefly in their tubular part, considerably congested.

CASE LXXII.—*Fever with typhoid symptoms. Increased vascularity of the membranes of the brain with air in the vessels and beneath the arachnoid; turgescence and ulceration of Peyers glands at the end of the ileum.*

John Steptoe, Private of H. M. 15th Hussars, two months resident in Bombay, was admitted into hospital on the 6th February 1840, and died on the 15th, but had been ill before admission. The following were the leading features of the disease. Pyrexia almost constant with an occasional remission in the middle of the day; hands tremulous; pulse from 100 to 120, compressible; tongue coated and dry in the centre, florid at the tip; sordes about the teeth; thirst; more or less diarrhœa; on one occasion pain between the right ribs and crest of the osilium. The eyes were suffused, at first wandering delirium at nights, and on the latter days drowsiness not amounting to coma.

Inspection. Head. There was moderate turgescence of the vessels of the membranes of the brain, with numerous globules of air in the vessels or underneath the arachnoid. On incising the brain, there were more than the usual number of bloody points. There was an ounce of serum at the base of the skull.

Abdomen. The liver was quite healthy. The mucous coat of the cardiac end of the stomach, dotted dark red, no softening.

The mucous coat of the end of the ileum was of dark red colour; the patches of Peyers glands were red, turgid, and prominent, and several of them were in different stages of ulceration; close to the ileo-colic valve, there was an ulcerated patch the size of a rupee. There was dark red colour of the mucous coat of the cœcum, but no ulceration. The rest of the large intestine was healthy.

CASE LXXIII.—*Convulsion and coma in a person said to have suffered from repeated paroxysms of fever. The pia mater vascular; the arachnoid opaque and thickened, with here and there patches and granules.*

J. S., ætat. 33. of stout habit, not long resident in Bombay, and latterly occupied in conducting an hotel, was admitted into hospital on the

evening of the 24th September 1840, at 5½ P. M. It was stated that for the five or six previous days he had been affected with fever of the quotidian and tertian type, and had suffered from a paroxysm ushered in with rigors at noon on the day of admission. When seen he had pyrexia with slight wandering; tongue pretty clean; pulse frequent and feeble; abdomen supple. An effervescing draught was ordered every second hour for three or four doses, and 24 leeches were applied to the temples and cold cloths to the head; a foot bath was directed to be used at bed time, and a draught, c. tinct muriat. morphiæ. ʒi. to be exhibited should the headache cease and there be no wandering. Was reported to have had no headache or wandering after the application of the leeches and the skin to have become cool. The draught was given about 10½ P. M.; he was reported to have got up to make water when he fell down convulsed. The head was immediately shaved and a blister was applied to the nucha. He died at 11 P. M.

Inspection fifteen hours after death. Body stout and loaded with fat. There were purple sugillations of the depending and posterior parts of the body.

Head. The sinuses and veins were turgid with blood, and there was a good deal of capillary vascularity of the pia mater over the entire convex surface of the brain. The arachnoid membrane was thickened and opaque, and in many places, chiefly at the dipping down between the hemispheres, there were patches and granules of lymph between the arachnoid and pia mater. The substance of the brain, when incised, shewed numerous bloody points, but was tolerably firm in texture. There was an ounce of serum at the base of the skull, but not more than the usual quantity in the ventricles.

Chest. The lungs were healthy and very little congested. The cavities of the heart were moderately distended with blood. The inner lining of the aorta had a rosy tint, and there was commencing white deposit, in spots and streaks. The muscular parietes of the heart were healthy.

Abdomen. The intestines and omentum were loaded with fat. The former distended with air pushed the liver up to the level of the 4th rib. The mucous coat of the stomach had a dusky leaden tint, and was slightly more tender in texture than natural. The kidneys were healthy and there was no distension of the bladder. The spleen was consider-

ably enlarged. The liver was of a greyish tint when incised, but natural in texture.

CASE LXXIV.—*Intermittent fever; some of the paroxysms complicated with convulsive fits, one of which terminated fatally. Thickening and opacity of the arachnoid membrane.*

Richard Parkman, ætat. 28, Seaman H. C. receiving ship Hastings, after having been ill with intermittent fever for two or three days, was admitted into the General Hospital on the 24th March 1842. On that day he experienced a febrile paroxysm attended with headache. An emetic was exhibited and followed by repeated doses of quinine. On the 25th, there was neither fever nor headache. On the evening of the 26th he was seized with a convulsive fit, but denied having been ever subject to such attacks. On the morning of the 27th he was free of fever or headache. Cold affusion to the head with a hot foot bath were used twice, and the only complaint made that day was of a sense of constriction of the throat towards night. On the morning of the 28th, he was free of fever, and quinine was directed to be given; he had a fit in the course of the day and again at night. On the morning of the 29th he was free of complaint and the skin and pulse were good. The liquor arsenicalis was directed to be given thrice, and cold affusion to be used to the head in the event of a recurrence of the fit. Towards evening there was a slight febrile accession, but he slept well, and at the morning visit of the 30th he was reported to have no headache, and to have had no return of the fit. The remedies used on the 29th were directed to be repeated. About half an hour after that report, he was seized with a fit reported to be not more severe than the former ones, and died in about five minutes.

Inspection. Head. On the upper surface of the brain, there was a thin veil of serum between the arachnoid and pia mater; the former membrane was opaquish in parts with here and there deposit of distinct yellow points, but in no great number. The substance of the brain was healthy; there were about two ounces of serum at the base of the skull.

Chest. The right ventricle of the heart was distended with blood, but the other contents of the chest were in a healthy state.

Abdomen. Old adhesions bound the liver to the side. The viscera were otherwise healthy.

CASE LXXV.—*Remittent fever admitted after a week's illness; head symptoms chiefly marked by unsteadiness of manner, and latterly drowsiness. Arachnoid membrane opaque and thickened; increased serous effusion.*

William Subbeter, ætat. 16, after having been ill for a week with headache and fever, was admitted into the General Hospital on the 9th May 1842. There was heat of skin, flushed countenance, undecided manner. The tongue was yellow in the centre and florid at the tip, and the epigastrium was tender. 24 leeches were applied to the temples, and 36 to the epigastrium; the head was shaved, cold applications were used, and sponging of the general surface had recourse to; effervescing draughts were exhibited from time to time, and some blue pill and ipecacuan. were given at bed time. On the morning of the 10th, there was still some heat and dryness of skin, but in other respects the symptoms were improved; and in the evening there was a distinct exacerbation of the febrile symptoms. Sponging, cold applications, and effervescing draughts were continued and the blue pill and ipecacuan. were repeated. On the morning of the 11th still pyrexia; pulse 92; tongue slimy and tremulous; bowels rather relaxed; manner unsteady. The remedies were continued with addition of spirit. æther. nit. to the effervescing draughts, and the application of a blister to the nucha. On the 12th febrile heat and other symptoms continued, accompained with slight subsultus. Camphor mixture c. spirit. æther. nit. was given every third hour; and chicken soup was ordered. On the 13th. pulse 104; four dejections quite feculent; in other respects as on the 12th. Sago and milk morning and evening, and chicken soup for dinner, and the camphor mixture continued. On the morning of the 14th, there was a distinct remission, and quinine and blue pill were ordered every second hour with effervescing draughts. The evening accession was milder. On the 15th and 16th the febrile exacerbation seemed to the somewhat checked under the use of the quinine, but on the 17th the symptoms were all again aggravated; three or four dejections generally in the twenty-four hours. On the 18th he vomited several times and passed three copious watery evacuations followed by sunken features, feeble pulse, and damp skin. These symptoms continued with the addition of drowsiness on the 21st, and death took place on the morning of the 24th.

Inspection eight hours after death. *Head.* The arachnoid membrane over the convex surface of the brain, was opaque and thickened with, here

and there, small rounded granules of lymph, the size of a pin's head. There was about an ounce of serum in the lateral ventricles; and about an ounce and a half at the base of the skull. The substance of the brain was firm.

Chest. Old adhesions connected the right lung to the pleura, but the substance of the lungs was crepitating. Heart healthy.

Abdomen. Liver healthy. Colon distended; mucous coat healthy. The mucous coat of the stomach was of dark grey tint with dark red streaks, but was sound in texture.

CASE LXXVI.—*Cholera; recovery from the stage of collapse; head symptoms; death by coma. Thickening and opacity of the arachnoid.*

William Scott, ætat. 32, Seaman of the barque Ritchie, was taken ill on the morning of the 5th June 1842 with symptoms of cholera, and was admitted into the General Hospital at 6 P. M. The state of collapse was considerable. The occasional purging of conjee-like dejections, but with a gradually improving pulse, continued during the 6th and 7th. He was treated with pills of camphor and blue pill, or Dover's powder and calomel, or Hydrarg. c cret.—On the 8th the gums were reported to be somewhat swollen, the dejections still pale in colour, and at the evening visit a want of alertness of manner was for the first time noted; a full dose of calomel was given. On the 9th defective secretion of urine was noted. During the 10th, 11th, and, 12th the drowsiness increased; the tongue became dry in the centre; there was occasional vomiting and hiccup. The excretions from the bowels scanty. The pulse and skin however were not much affected. No urine was passed, but the catheter was used several times, and at each, a pint or two of urine was drawn off. Blisters were applied to the epigastrium and nucha; ol. Ricini and ol. Terebinth. were exhibited.

On the 13th and 14th the drowsiness increased with muttering delirium, and oppressed breathing, and the pulse lost strength. He died at 5 A. M. of the 15th

Inspection. Head. There was vascularity of the pia mater; thickening and general milky appearance of the arachnoid membrane with opaque points here and there. There was about an ounce of slightly turbid serum in the lateral ventricles.

Chest. The lungs collapsed, but there was œdema of the posterior parts without hepatization. The heart was healthy.

CASE LXXVII.—*Fever, symptoms typhoid and badly developed, ending in coma. Serous effusion and vascular congestion in the head, also air in the vessels; colon distended and in parts displaced.*

Neil Wallace, ætat. 28, Seaman of the ship Samuel, was admitted into the European General Hospital on the 21st October 1841. He stated that for a fortnight past he had experienced a sense of weight at the centre of the chest for which he had taken much medicine; on admission he inspired freely and there was neither pain of chest nor cough; the skin was dry and above the natural temperature; the pulse was frequent and of moderate strength; and the tongue was florid. It was supposed that he had been living freely for some days. On the 22nd and 23rd the abdomen was full, the pulse from 88 to 92 and feeble, and on the latter day his manner and expression were dull and heavy. He was blistered on the nucha, a full dose of calomel (grs. x.) was given followed by castor oil, and on the morning of the 24th he was somewhat alert; the bowels had been opened twice; the skin was moist; the pulse 92 and feeble. Port wine and sago were given. At the evening visit, the pulse still feeble, but there was febrile heat of skin; the tongue was florid, and the sluggishness of manner had increased. The head was shaved and cold cloths applied, and a nitro-muriatic acid foot bath was used. He continued to lose ground; there was generally a morning remission and evening exacerbation of fever; the pulse became feebler; the hands tremulous and with subsultus tendinum; the tongue became dry; the drowsiness increased, at last passing almost into complete coma. He died on the 31st October.

Inspection 14 hours after death. *Head.* A thin veil of serum between the convolutions of the brain on the convex surface; and the small vessels of the pia mater were in parts injected with blood, and the large ramifications contained air. No increased quantity of serum in the ventricles or at the base of the skull.

Chest. The lungs inflated did not collapse; heart healthy.

Abdomen. The liver was healthy. The colon was much distended with gas, and the sigmoid flexure, thrown across the small intestines, was applied to the inner aspect of the ascending colon; the large intestine was sound in texture.

CASE LXXVIII.—*Remittent fever; no coma. Serum underneath the arachnoid and at the base of the cranium; the liver much enlarged; dark rosy tint of the mucous coat of the stomach.*

John Martin, ætat. 58, Cook of the ship Herefordshire, was admitted into Hospital on the 31st of October 1840. He stated that for two days he had suffered from vomiting, purging, headache and sense of oppression at the lower part of the sternum, which complaints he attributed to exposure to the sun whilst the ship was undergoing repairs in dock. On admission, the face was flushed; there was anxiety and oppression; pulse 120, jerking, and easily compressed; abdomen full; tongue dryish and florid; skin hot and dry. He was freely leeched on the epigastrium and blistered, was cupped on the nucha and subsequently blistered. He took two or three ten-grain-doses of calomel and one of a scruple. The symptoms altered little. There was much restlessness and moaning; oppressed breathing; frequent vomiting; dejections of dirty light grey colour and watery; tongue dry and florid; pulse frequent and compressible; skin dry and generally above the natural temperature; abdomen full. He continued quite sensible and died in the forenoon of the 2nd November.

Inspection five hours after death. *Head.* There was a thin veil of serum under the arachnoid membrane on the convex surface of the brain, and an ounce of serum at the base of the skull. On incising the substance of the brain, there were more than the usual number of bloody points observable.

Chest. There were old adhesions of the right lung. The lungs were moderately collapsed and there was no congestion of the posterior parts. The cavities of the right side of the heart were full of blood; and there was commencing disease of the aortic valves and beginning of the aorta.

Abdomen. The omentum was loaded with fat, the intestines, both great and small, were collapsed. The liver enlarged reached to the crest of the os ilium and to the umbilicus; it was of pale yellow colour and when incised did not give out much blood. The gall bladder was rather flaccid. The spleen was soft and pulpy. The mucous coat of the stomach had a dark rosy tint, general throughout, with dark brown patches, but the texture was not softened. The kidneys were somewhat lobulated and rather small, but there was no well marked disease of their structure.

Abscess in the brain and tumour with softening.

CASE LXXIX.—*Abscess in the left hemisphere of the brain; for some time general febrile symptoms; hemiplegia of the right side some days before death.*

Jeremiah Merit, an African, ætat. 24, after a month's illness was admitted into the European General Hospital, on the 2nd September 1842. He suffered under a mild attack of dysentery and was discharged well on the 9th October. Re-admitted on the 19th October, ill with quotidian fever, associated with pain of the left hypochondrium, and he was discharged well on the 1st November. Re-admitted on the 24th November, he suffered under irregular febrile accessions, but to no great extent; he made no complaint of local uneasiness, and the suspicion was entertained that he was disposed to make more of his ailments than their apparent importance justified. On the 20th December, his bowels were relaxed and he complained of cramps of the limbs. On the 21st the right arm and leg were weak. On the 22nd there was complete hemiplegia of that side with occasional twitching of the arm. There was heat of skin, and he was manifestly losing flesh and strength; no headache complained of. He continued in this state with generally a febrile accession towards evening. He died on the 28th.

Inspection seven hours after death.

Head. There was considerable thickening with an opaque state of the arachnoid membrane of the upper surface of the brain with yellow points here and there. In the left hemisphere of the brain above the lateral ventricle, there was an abscess, the size of a large walnut, filled with pus and surrounded with a pulpy state of the cerebral substance. The right side of the brain was healthy.

Chest. Old adhesions of the lungs and pearly deposit on the surface of the heart.

CASE LXXX.—*Amaurosis of both eyes; headache; fatuity; convulsions; tumour in the brain with much softening of the cerebral substance.*

Joshua Paterson, ætat. 25, Seaman of the ship Don Pascoa, was admitted into the European General Hospital on the 25th April 1841, affected with complete amaurosis of both eyes and complaining of pain of the right side of the head, fixed at the temple and shooting in different

directions. He was somewhat reduced in flesh and strength; he stated that about fifteen months before, he became affected with headache, and had continued subject to it ever since; about seven months before admission, the pain was confined to the left temple and was followed by amaurosis of the left eye; whilst at sea about two months since, the pain affected the right side of the head, and the amaurosis of the right eye took place about a fortnight before admission. He continued in hospital till the 2nd December 1842, (a period of 19 months) when he died. During the first month or two, there was more or less pain of head. Leeches, blisters, &c. were used. During the greater part of his residence in hospital, he was in a fatuous state, and made little complaint. On too occasions he experienced convulsive fits followed by sopor, and twice extensive sloughing ulcers formed on the sacrum. Some days before his death, he lay in a drowsy state with twitching movements of the fingers, and refused all food.

Inspection eight hours after death.

Head. The lower part of the anterior lobes and the anterior part of the middle lobes of the brain adhered to the calvarium and were separated from it with difficulty. The brain in these sites, but chiefly the anterior part of the middle lobe of the left side, was in a very pulpy state; in the latter site there was imbedded a tumour, the size of a small walnut, partly schirrous and partly tubercular in its character. The rest of the brain nearly natural.

Thoracic Diseases.

Phthisis Pulmonalis.

Case lxxxi.—*Phthisis pulmonalis; lungs tuberculated, hydatid sac in the abdomen, also in the liver; peritoneum studded with miliary transparent tubercles.*

Edward Collingridge, H. M. 15th Hussars, ætat. 22, had been troubled with a pectoral affection, during the voyage, and was admitted into hospital on the 10th November 1839. He was pale, sallow, and had frequent dry cough. Tubercular deposition in the lungs, was suspected, though the physical signs did not make it quite clear. On the 3rd December the abdomen was tense and full, with sense of fluctuation. There was constant hectic fever with increasing emaciation, and he died on the 2nd January.

Inspection twelve hours after death, body much emaciated.

Head. There was a thin veil of serum between the arachnoid and pia mater on the convex surface of the brain. The substance of the brain was soft.

Chest. There was a pint of serum in the sac of each pleura. The anterior part of the lungs was emphysematous and miliary tubercles were disseminated throughout. The posterior part of the upper lobe, and almost the whole of the lower lobe of the right lung was impermeable from tubercular infiltration; in places, there were tubercular masses the size of a pigeon's egg, but generally it was intermixed with the red parenchyma and presented the variegated appearance (when incised) of shell marbles, in which red and white are the predominating colours. The posterior part of the left lung was œdematous, but there was little tubercular infiltration. The heart was healthy.

Abdomen. The intestines were displaced, and the centre part of the abdominal cavity was occupied by a hydatid sac which completely filled the pelvis, rose over the promontory of the sacrum, and reached to the margin of the left lobe of the liver. This sac was filled with many pints of hydatids, transparent and clear, ranging from a marble in size, to a large orange; there was also a great quantity of yellow membranous shreds, the evident teguments of dead hydatids. In the left lobe of the liver were two sacs, each the size of a small orange, also filled with hydatids. The intestines were of a dark leaden colour, and generally contracted. The mesentery and much of the peritoneal surface of the intestines, and also the omentum, were studded closely with miliary tubercles, about the size of a mustard seed; and to these the small red ramifications of vessels very frequently extended. The stomach was small. The kidneys healthy. The examination was not further pursued.

CASE LXXXII.—*Incipient phthisis; death by dysenteric symptoms; miliary and crude tubercles in the lungs; large intestines ulcerated.*

John Parks, ætat. 38, an Engineer of the Steam Department of slight habit, had served in North America, and been exposed to vicissitudes of climate, and been subject to catarrhal affections. Arrived in Bombay a few months before his admission into hospital, on the 1st April 1839. He was supposed then to labour under catarrh; he was improved by the

treatment and returned to his duty on the 14th April. He was re-admitted into hospital, on the 6th May complaining of an increase of cough attended with scanty and frothy expectoration. There was no pain of chest and no excitement of pulse. Blisters were repeatedly applied to the chest, antimonials, squills, muriate of morphia with ipecacuan. and extract of conium were given, with occasional, but temporary alleviation of the symptoms. On the 4th June, the duller sound on percussion below the right clavicle, the obscure respiratory murmur under both clavicles, and the occasional subcrepitous ronchus led to the suspicion that tubercles were in process of deposition, and that the disease had advanced most on the right side. He continued harassed by the cough, to which occasional dyspnœa was superadded, till the 21st June, when dysenteric symptoms first shewed themselves and progressed without check. There was distressing tenesmus, frequent dysuria and tenderness of abdomen. He was freely leeched and blistered; opiate enemata, and suppositories, were used, and latterly opium in two grain doses every three hours was given for several days, with relief to the suffering, but without inducing symptoms of narcotism. He died on the 11th July.

Inspection eleven hours after death.

Chest. At the posterior part on both sides there were extensive adhesions of the costal and pulmonary pleura; several portions of the right lung were tuberculated, and this was chiefly the case in the upper lobe. There were a few miliary tubercles in the left lung.

Abdomen. The liver was of pale colour, and in the right lobe there were two small abscesses. In the transverse colon there was extensive ulceration, and the mucous follicles in the other portions of the colon, were in different degrees of developement or ulceration.

CASE LXXXIII.—*Incipient phthisis; miliary tubercles few; death from diarrhœa. Thickening with dark red discoloration of the mucous coat of the end of the ileum, and of the large intestines; redness, in places, spotted and in the centre of each spot there was a mucous follicle.*

Richard Peers, of sallow and emaciated habit, ætat. 29, Seaman of the ship Surry, had led a sea life for nine years, had never been in India before his present voyage; had been employed in the English coasting trade and enjoyed good health. He was admitted into the General Hospital on the 17th May 1839; he stated that for six weeks, he had suffered from uneasiness of chest, inability to inspire freely, occasional hard cough,

with scanty expectoration, occasional febrile accessions and night sweats. The pulse was feeble and the tongue was clean; the cough was generally excited by decubitus on the back. He continued till the 26th suffering more or less from cough, and scanty expectoration, occasional febrile exacerbations and night sweats, and losing flesh and strength. On the 31st May, the physical signs were, no dulness on percussion below the clavicles; on the left side the respiratory murmur under the clavicle was good, and there was no resonance of the voice; on the right side the respiratory murmur was blowing below the clavicle, and there was distinct resonance of the voice both below the clavicle and above the spine of the scapula. The stethoscopic examination annoyed him and was not repeated.

Throughout this period the treatment consisted in repeated blistering, occasional leeching; the use of antimonials, or of pills of extract of conium ipecacuan. digitalis, and muriate of morphia; occasionally a pill of calomel and opium was given and followed by castor oil. On the 26th June there was frequent purging, the abdomen was distended and tender; the skin was above the natural temperature; the pulse 100 and firm, and the tongue florid at the tip and edges. Ten ounces of blood were taken from the arm, four dozen of leeches were applied to the abdomen, and repeated on the same day, and again on the 27th, followed by a large blister; calomel, opium, and ipecacuanha, were given and continued, and mercurial inunction was also used. On the 29th the distension and tenderness of abdomen had ceased, but the purging continued unabated; there was no constitutional effect from the mercury; the cough had ceased to be complained of. The treatment from this date consisted chiefly in the exhibition of anodyne enemata with acetate of lead; pills of quinine hydrarg. c. cret. and opium. The purging continued unchecked and attended with troublesome hiccup. He died on the 9th July.

Inspection five hours after death. Body much emaciated. Abdomen collapsed.

Head. Brain exsanguine; there were about three ounces of serum in the cavity of the head, chiefly at the base of the skull.

Chest. Firm old adhesions united the anterior aspect of the upper lobes of both lungs to the parietes of the chest. There was emphysema of the edges of the lobes, and also of part of the body of the lobes; there were a few miliary tubercles here and there, so few however, as not to lead to condensation of any part of the lung. The lower lobe of the left lung was firm, not hepatized, but much gorged with frothy serum. The heart was healthy.

Abdomen. The liver was of dark olive brown colour externally, and presented the same colour when incised; the texture was firm. The stomach was healthy. Of the mucous coat of the end of the ileum there was dark red discoloration arranged in streaks and attended with thickening of the tunic. Throughout the large intestines the mucous coat was thickened, firm and more closely adherent to the submucous tissue, much of its free surface was irregular and warty but not ulcerated; throughout, it was discoloured, dark red, dark brown, or olive green; in places this discoloration assumed a spotted character, the spots close set and in the centre of each there was a mucous follicle. The mesenteric glands were not enlarged, and there were no traces of peritonitic inflammation.

CASE LXXXIV.—*Phthisis pulmonalis; lungs tubercular. The liver pale and much enlarged.*

William Potter, artificer of the Gun Carriage Department, ætat. 24, a man of dissipated habits and slight frame, an Indo-Briton. In the early part of 1839, he began to suffer from a pectoral affection and to lose flesh. He was admitted into hospital on the 15th April 1830; at that time he was suffering from confirmed phthisis; he remained in hospital till the 30th June and then returned to his duty. He was re-admitted into hospital on the 15th October. The symptoms had became aggravated. He died on the 31st March.

Inspection. Body much emaciated. The chest narrow; there were old adhesions of the pulmonary and costal pleura. The anterior part of the lungs was emphysematous; the posterior parts were infiltrated with tubercular matter. The liver was of pale colour and much enlarged, it occupied both hypochondria and the epigastrium, and reached in a vertical direction four inches below the ensiform cartilage to the level of the 9th rib; its texture was pale and hard.

CASE LXXXV.—*Pertussis; lungs tubercular; hypertrophy of the left ventricle of the heart in a child, reported to have been subject to asthma.*

Henry Wallace, ætat. 7, a feeble boy, reported to have been subject to occasional attacks of asthma, was admitted into hospital, ill with pertussis on the 23rd May 1840, and died on the 26th.

Inspection. Chest. Both lungs were pale and emphysematous, and completely occupied the chest. The right one presented, here and there, in all the lobes the commencement of tubercular deposition, either in the

form of occasional grey miliary tubercles, or grey tubercular infiltration. A small quantity of frothy mucus exuded from the cut ends of the bronchial tubes. The left lung was white and dry with very little tubercular deposit. There was little vascularity of the bronchial lining, but at the bifurcation of the bronchi, there was a calcareous concretion, the size of an almond. The left ventricle of the heart was somewhat hypertrophied.

Abdomen. The liver filled the epigastrium and projected beyond the ribs. The mesenteric glands ranged from a horse bean to an almond, in size, and some of them were cretaceous.

CASE LXXXVI.—*Phthisis pulmonalis; the right lung studded with miliary tubercles which were also apparent underneath the costal pleura; the mucous coat of the large intestines and the end of the ileum ulcerated.*

John Johnstone, ætat. 52, a Seaman of broken constitution, was admitted into hospital, on the 9th October 1840. He had been ill for a fortnight with acute pain about the right false ribs, attended with short troublesome cough, diarrhœa, and night sweats; there was a good deal of subcrepitous rale about the right side of the chest, and on the left side the respiration was puerile. During his residence in hospital the pain of the side ceased; there was frequent cough generally, with scanty, glairy expectoration; a sense of tightness across the chest, and no fulness about the right hypochondrium. There were occasional febrile accessions, but no recurrence of diarrhœa till the 10th November. After which he sunk rapidly and died on the 21st. Tongue generally clean and moist.

Inspection twelve hours after death. Body emaciated.

Chest. The left lung was fully collapsed. The right one adhered firmly to the costal pleura and was closely studded with miliary tubercles, many of which had commenced to soften; in the upper lobe there was a cavity as large as an almond; the lowest lobe adhered firmly to the diaphragm. On separating the adhesions, parts of the costal pleura were seen, with small miliary tubercles, the size of mustard seeds, transparent, standing in slight relief from the surface, and plainly situated underneath the pleura. In the left lung there were some miliary tubercles, but few, some of them immediately underneath the pleura and standing in slight relief from the surface, covered by the pleura, transparent and unaltered. Heart healthy.

Abdomen. Liver quite healthy without adhesions any where. The intestines had a dark leaden tint. The mucous coat of the ileum was of a

dark red colour, with many round ulcers. The mucous coat of the large intestines was of a dark grey tint, in places almost black; the surface generally irregular, from the mucous coat being fixed in a rugous state; there were numerous ulcers some of them cicatrizing. Kidneys healthy.

CASE LXXXVII.—*Phthisis pulmonalis; both lungs much tuberculated. In the lower lobe of the left lung there were transparent and miliary tubercles, immediately underneath the pleura, and apparently in the sub-serous tissue.*

Samuel Milligan, ætat. 21, a Seaman with fair hair, and of strumous habit, was reported to have been attacked with bronchitis in July 1840. After having suffered during the two or three months before, from iritis and a papular eruption. For the bronchitic attack he was brought under the influence of mercury, but the cough and dyspnœa were never completely removed. He was admitted into hospital, on the 28th September 1840. There was then no doubt, that he was labouring under phthisis. The disease became more fully developed; the expectoration puriform, attended with hectic fever, apthous tongue, and diarrhœa. He died on the 25th November.

Inspection ten hours after death. Body much emaciated.

Head. There was more than the usual quantity of serum in the ventricles and at the base of the skull.

Chest. Both lungs were connected by firm adhesions to the costal pleura. The whole of the right lung was studded with closely set crude yellow tubercles. The size of a pea or larger, many of them coalescing, none softening. In the upper lobe of the left lung the disease had advanced further, and there were irregular and considerable cavities; there were miliary tubercles in the lower lobe and several of them were very small, not nearly so large as a mustard seed, transparent, immediately under the pleura, and moving with it when the surface was rubbed. The heart healthy.

Abdomen. The liver was of dark red colour but natural in texture. Stomach healthy. The large intestine was contracted; its mucous surface rugous; there were many small circular ulcers, but no thickening of the mucous coat. The inner surface of the cœcum was of dotted red colour without ulceration. At the end of the ileum the mucous glands were numerous and distinct, and parts of the surface reddened, but no ulceration. The mesenteric glands were generally enlarged; the largest, about the size of a horse bean, but none of them were tubercular. The kidneys were healthy.

CASE LXXXVIII.—*Phthisis pulmonalis. The tubercular deposition further advanced in the left lung.*

Charles, ætat. 38, a fair haired, but moderately stout, Swede, a Seaman of the Inglis, had been ill with a pectoral affection for five weeks, before admission into hospital, on the 10 May 1840. Respiration hurried, on admission; cough frequent; expectoration white and frothy, then becoming copious and puriform. On the 2nd June, the physical signs are no dulness on percussion on either side; throughout the right side the murmur is distinct, somewhat louder than natural and unmixed. On the left, from the clavicle to the nipple and posteriorly at the scapula, there is low subcrepitous rale, and lower down the respiration is somewhat blowing. He was discharged relieved on the 16th July. Re-admitted on the 28th, and died on the 25th August.

Inspection. The left lung adhered throughout firmly to the pleura, was much indurated, and studded with miliary tubercles which were in progress of softening; in the upper lobe there was a cavity two inches long. The right lung also tuberculated in a less degree.

CASE LXXXIX.—*Phthisis pulmonalis. Both lungs much tuberculated. The optic nerves both obliterated after blindness of eleven years, duration.*

William Wroughton, ætat. 25, an Indo-Briton, *blind.* Born in India and brought up at the Byculla Schools. Admitted into hospital on the 5th November 1839, emaciated, with feeble pulse, and stating that for two months he had had a pulmonic affection with frequent cough and copious yellow sputa. Physical signs, below the right clavicle there is dulness on percussion, not so on the left. Pectoriloquy under the right clavicle with cavernous respiration; elsewhere anteriorly on that side, the respiration is bronchial. On the left side under the clavicle, loud pectoriloquy, cavernous respiration, and occasional subcrepitous rale. No diarrhœa. He died on the 15th.

Inspection eighteen hours after death. The brain was generally soft in texture. The optic nerves were wanting; there was the pearly coloured neurilemma passing into the orbits, rising from the membranes and having no connection with the cerebral substance. From the softened state of the brain the parts became lacerated, but I think, that the tractus optici as they pass round the crura-cerebri were also wanting. The eyes sunken in the orbit, and the cornæ opaque and pearly.

Chest. The lungs did not collapse partly from emphysema, partly from their being solidified. Right side. The upper lobe adhered to the costal parietes, and with the exception of the thin edge was completely impermeable from uniform tubercular infiltration ; at the upper and back part of that lobe, there was an empty excavation, the size of a hen's egg, and another the size of a walnut ; the posterior part of the second lobe was also much solidified from tubercular infiltration. The mucous lining of the bronchi was dark red and there were about eight ounces of serum in the sac of that pleura. The upper lobe of the left lung adhered, but not closely to the walls of the chest, and throughout, tubercular matter was infiltrated in nodules ; the second lobe was most solidified and that chiefly at its posterior part ; at the upper part of the second lobe there was a cavity the size of a walnut.

Abdomen. Stomach and kidneys, healthy ; the viscera not otherwise particularly examined.

Remarks. There is accurate information relative to the blindness of this boy. He was admitted into the Byculla School, with his sight perfect in 1825, lost one eye in 1826, and the other in 1828.

CASE XC. — *Phthisis pulmonalis ; the disease furthest advanced in the right lung.*

Thomas Brett, ætat. 20 a Servant, of fair complexion, had been complaining ever since he left England, some months before, he was admitted into hospital on the 21st October 1839. Respiration oppressed ; cough frequent. The disease ran a rapid course with copious puriform expectoration and frequent febrile accessions and night sweats. He died on the 18th December.

Inspection. The right lung in part hepatized, with pleuritic adhesions, tubercular deposition, and a cavity in the upper lobe. The left lung also contained a cavity, but it was less indurated in its substance.

CASE XCI.—*Phthisis pulmonalis in a pensioned Serjeant of intemperate habits.*

James, ——— ætat. 48, Serjeant of the Pension list, and Crier in the Supreme Court, was admitted into hospital on the 16th July 1839, broken and emaciated. Some months before, he had been under treatment for hœmoptysis and delirium tremens, and he stated that after that illness, he was much troubled with cough, and expectoration of yellow sputa.

Physical signs. Is emaciated. There is considerable depression under the right clavicle, and the sound, on percussion there, is somewhat duller but very little so, than on the other side ; under that clavicle there is cavernous respiration and pectoriloquy, the latter much more distinct above the spine of the scapula ; elsewhere anteriorly on that side of the chest, there is puerile respiration, but no rales. Under the left clavicle there is also cavernous respiration, but pectoriloquy is suspected, it is not very distinct; puerile respiration, also, elsewhere on that side, and no rales. The cough continued troublesome, sputa copious and puriform. He died on the 29th July. The friends objected to the body being opened.

CASE. XCII—*Extensive ulcer on the groin; miliary turbercles in the lungs, and underneath the peritoneum throughout its whole extent. Follicular ulceration of the large intestines. Three ounces of serum in the cavity of the cranium; no head symptoms.*

Charles Sutherland, ætat. 24, a Seaman of fair complexion and strumous habit, was first admitted into the hospital on the 16th October 1838. affected with an extensive ulceration of the left groin, and of the under and upper part of the thigh of the same side. This affection was of several months duration and was attributed to a venereal sore, with which he had been affected some time previously. He remained in hospital without improvement till the 17th January, when being impatient from the tedious nature of his illness, and at the want of success attending the treatment, he was discharged at his own desire. He was re-admitted on the 17th February, having been during his absence from hospital, under the care of a Hakeem in the bazaar, who had used various applications and given internal remedies, in consequence of which the mouth had become affected. At this second admission the ulcer on the groin had a more unhealthy appearance, its edges being ragged and irregular ; that on the thigh had become double its former size and had also irregular ragged edges.

Sarsaparilla and Hydriodate of Potass were prescribed and continued for sometime, and the applications to the ulcers were frequently changed and varied. The ulcers did not at all improve in appearance, and the general health declined, and on the 9th April he first complained of cough with scanty expectoration. The cough continued more or less troublesome, most troublesome, during the three weeks, immediately succeeding its first appearance, than at any subsequent period. The ulcers were generally stationary, sometimes, however, for a few days assuming a more healthy appearance, and then again relapsing. The strength declined; night sweats

became troublesome, the cough ceased; and on the 19th June, diarrhœa commenced, and was more or less urgent and attended with florid tongue, till the period of death on the 15th July.

Inspection six hours after death; body emaciated; abdomen collapsed.

Head. There was no turgescence of the vessels and there were about three ounces of serum at the base of the skull.

Chest. There were adhesions of the upper lobe of the right lung to the anterior parietes, and opposed to these adhesions there was a crude tuberculous nodule the size of a walnut; the lowest lobe of the right lung was moderately congested with frothy serum. The upper lobe of the left lung was healthy; the lowest part of the lower lobe was in a state of red hepatization, and at the upper part, and immediately below the pleura there were miliary tubercles deposited. The heart was healthy.

Abdomen. There were about five ounces of clear serum in the cavity of the pelvis. Over the peritoneal lining of the lateral part of the abdomen, of the pelvis, and of much of the intestines, there was a blush of ramified redness and the tunic was studded, in these places, with isolated miliary tubercles, transparent, none larger than a pin's head and many smaller; in many instances, they seemed to constitute the termination of a vascular ramification. Underneath the peritoneal lining of the diaphragm where opposed to the liver, there was a similar tubercular deposition, but here, instead of standing in relief, it was compressed into flattened patches—a modification evidently caused by the resistance of the liver, because, on the left side of the diaphragm, where there was no resisting object, the tubercles stood out in relief as elsewhere. These appearances were much more developed on the right, than on the left side of the abdomen. The mucous coat of the stomach was dotted dark red at the cardiac end, but it was healthy in texture; towards the pylorus, it was mammillated and thickened. The liver was pale and mottled. The mucous coat at the end of the ileum was vascular and studded with mucous glands. The mucous coat of the colon and rectum was studded with ulcerated follicles, and in some, cicatrization had commenced; here and there, there were patches of reddish lymph with occasionally a yellow central point like a tubercle. The mesenteric glands ranged in size from a pea to a horse bean, but they were not tuberculated. The kidneys were healthy.

CASE. XCIII.—*Phthisis pulmonalis in an African affected with, and sometime suffering from tubercular elephantiasis.*

Richard Slade, an African, had been in hospital, ill with tubercular

elephantiasis was discharged, relieved ; re-admitted after a month in the last stage of pulmonic disease.

Inspection. The lungs quite impermeable, in great measure from tubercular deposition. There were cavities here and there.

CASE XCIV.—*Phthisis pulmonalis in a Seaman, also affected with scurvy; the disease farthest advanced on the right side.*

James Rowland, ætat. 34 a Seaman of the ship Java, was admitted into hospital on the 28th October 1840. The following is the report on admission. " Has been a long time on the voyage from England, and arrived yesterday. There were discoloured and livid patches on the legs; gums scorbutic. Suffered from a pulmonic affection for four months, at one time attended with copious puriform expectoration. At present he is sallow and emaciated ; respiration laboured; pulse 108, feeble; skin above the natural temperature. He has acute pain which shoots from the cardiac region to the posterior part of the left hypochondrium ; abdomen rather full and somewhat tense; bowels reported to be opened three or four times daily; tongue moist and clean. *Physical Signs.* The anterior part of the right chest is markedly flattened; and is dull on percussion throughout, under the clavicle. The respiration is cavernous, and pectoriloquy is distinct and shrill. Elsewhere anteriorly, there is an occasional bronchial sound, but no healthy murmur. On the left side the murmur is high, and puerile.

He was treated with tonics, anodynes, and nourishing diet. He lingered till 2nd December when he died. Latterly there was diarrhœa.

Inspection 14 hours after death. Body emaciated.

Head. An ounce of serum at the base of the skull, otherwise healthy.

Chest. The right lung adhered very firmly to the costal pleura and was throughout quite condensed by tubercular infiltration. The left adhered by bands of adhesion, was spongy, but with numerous miliary tubercles throughout the upper lobe; also many immediately beneath the pleura of the lung. Heart, rather enlarged.

Abdomen. Stomach and intestines distended with air; not further examined.

Pleuritis.

CASE XCV.—*Irregular febrile symptoms with diarrhœa; mental depression. The arachnoid thickened and of milky colour. Empyema of the right pleura, not suspected during life: mucous coat of the colon of grey colour with round ulcers here and there.*

Charles Wilson ætat. 40, had been an Engineer in the Steam Depart-

ment and was of dissipated habits. He had been affected with dysenteric symptoms for which he was bled and leeched and took remedies some days before his admission into hospital, on the 14th December 1839. The symptoms during his residence in hospital, were diarrhœa with a tongue coated in the centre, and frequently florid at the tip; frequent febrile exacerbations, and great depression of spirits. No cough or pectoral symptoms noted in any of the reports. He died on the 14th January.

Inspection. The arachnoid membrane was thickened and of milky colour. The right lung was compressed and there were about three pints of purulent matter in that sac of the pleura; and the pleura was coated with a layer of lymph. The liver was enlarged, pale, mottled. The mucous coat of the stomach mammillated. The small intestines were healthy. The mucous coat of the cæcum and colon of dark leaden grey colour, with here and there round ulcers.

CASE XCVI.—*Admitted after twelve days illness with febrile symptoms; death after three days and a half residence in hospital. Ten ounces of turbid serum in the right sac of the pleura. Lungs œdematous.*

James Stephens, Seaman H. C. R. Ship Hastings, was admitted into the European General Hospital on the evening of the 20th September 1841. It was stated that he had suffered for twelve days previously from febrile symptoms, with pain at the epigastrium and had passed several tape worms. On admission, his breathing was quick and oppressed; the countenance was anxious; the skin damp; the pulse feeble, quick and irregular. There was strong action at the cardiac region, the impulse of the heart very forcible, and the sound not to be distinctly marked. He made no complaint of pain, but of vertigo on assuming the erect position. On the 21st the breathing was less oppressed and the strong action of the heart had decreased; the respiratory murmur was heard unmixed on both sides anteriorly; the posterior part of the chest was not examined. The pulse was 112 and feeble; the tongue dry in the centre; the urine scanty, and the bowels slow and his general manner was confused. A turpentine enema was used, a sinapism was applied to the cardiac region, the head was shaved, and a blister applied to the nucha, and some diuretic medicine was given. On the morning of the 22nd there was very little change. Effervescing draughts were used, and wine in small quantities with sago was given from time to time. Towards evening there was less oppression of breathing, and at that time the respiration on the left side anteri-

orly was puerile; on the right side blowing, with occasional crepitus and sonorous ronchus, and at the lateral part of the chest and about the right nipple, the respiratory murmur was faint and short. The posterior part of the chest was not examined. He continued to lose ground. On the 23rd was troubled with cough. He died on the morning of the 24th.

Inspection eight hours after death. Body stout, purple sugillations on the posterior part of the trunk.

Head. Brain healthy.

Chest. In the right sac there were about ten ounces of turbid brown fluid, but no effusion of lymph on the surfaces of the pleura. There was a good deal of œdema of the posterior part of the lowest lobe, but no hepatization of any part of the lung. The left lung adhered firmly by old adhesions, but was crepitating and healthy in its texture. The heart and aorta were perfectly healthy. The liver was healthy. The intestines distended with flatus. The stomach small. The spleen healthy. In both kidneys there was commencing yellow striated deposit in the cortical substance.

CASE XCVII.—*Pleuritis; seven pints of serum in the right chest with large coagula of blood.*

Thomas Morris, ætat. 25, a Seaman of H. M.'s Ship Volage. Had led a sea life for twelve years, had been chiefly employed in the North American merchant service, and had not suffered from pectoral affections. Was admitted into the European General Hospital on the 24th March 1839. In the statement of his illness which accompanied him, it was noted that he had been taken ill on the 5th March with severe cough, dyspnœa, and pain of chest. He had been bled, blistered, taken purgatives, and subsequently squill mixture.

On admission into hospital the pulse was feeble; the countenance sallow; he complained chiefly of debility and occasional dry cough. He stated that his illness began with pain in the line of the sternum, attended with cough, and frothy expectoration. The following were the physical signs recorded. "The level of the right nipple is somewhat below that of the left, but there is no other cognizable difference in the appearance of the two sides All over the right side of the chest, anteriorly, laterally, and posteriorly, the sound is dull on percussion, and the respiratory murmur is inaudible. On the left side, the sound is clear on percussion, and the respiration is puerile." He was ordered squills with antimonial mixture and tincture of hyosciamus. On the 26th a blister was applied to the right side of the chest, and on the 27th he commenced to take at bed

time, calomel pulv. scillæ. á gr. ii. ipecac. gr. ss. opii. gr. $\frac{1}{4}$ and acid sulph. dilut. m. xv. twice in the course of the day. Continued till the 2nd of April, annoyed with dry cough, the pulse being frequent and feeble, and night sweats present. On the 2nd April he complained of pain at the epigastrium, for which he was leeched with partial relief, and on the 3rd it is noted that "from the margin of the right ribs in the epigastrium and to the umbilicus, the sound is dull on percussion; there is no tumefaction, but more resistance than on the other side. The respiration is oppressed." He continued with little change and unrelieved by the repetition of the leeches till the 9th, when it is noted "that he had passed a restless night from dyspnœa and short dry cough; decubitus is easiest on the right side; respiration at present laboured; murmur almost inaudible on the right side and puerile on the left; there is still uneasiness at the epigastrium and at the edge of the right ribs, with resistance and dull sound on percussion; pulse almost imperceptible." He died at midnight.

Inspection six hours after death. Body not emaciated.

Head. There were about two ounces of serum in the cavity of the head.

Chest. There were seven pints of fluid in the sac of the right pleura; at the upper part, it was clear serum, and towards the spine, coloured with blood of which there were coagula of considerable size loosely adherent to the false membrane which lined the pleura. The pleura pulmonalis and costalis were coated with a layer of lymph which peeled readily off; the right lung was quite condensed and compressed against the spine. There were old adhesions of the left lung and a good deal of frothy serous infiltration of its substance. The heart was natural.

Abdomen. The liver was pressed down and almost reached the crest of the os ilium, and the diaphragm above the liver was quite flat, it had lost its arched form. The abdominal viscera, so far as they were examined, were healthy.

CASE XCVIII.—*Scorbutus; death sudden. Left lung œdematous; two pints of serum in the right pleura. The liver enlarged, mottled red and white; serous effusion in the head without symptoms.*

William Adam, ætat. 47, Joiner of the ship David Clarke, a ship just arrived, and from which several scorbutic men had been received into hospital. He was of sallow complexion and was admitted on the 5th March 1840; he stated that for a fortnight past, he had suffered from pain of the right hypochondrium, attended with difficulty of breathing, on

slight exertion, and increased by lying on the right side; that he had also suffered from cough. He was bled on admission with relief and took antimonial medicines; the blood taken coagulated firmly. During the 6th 7th and 8th, he complained little of his side, but chiefly of weakness, with sense of faintness, nausea and cold perspirations. At 1 P. M. of the 8th it was reported, that he fainted when at stool. He was carried to his cot and expired immediately.

Inspection. Head. At the depending part of the convex surface of the brain, there was a considerable veil of serum between the arachnoid and pia mater, and there was an ounce at the base of the skull.

Chest. On the left side there were eight ounces of serum and old bands of adhesion connected the pulmonary and costal pleura. The left lung was œdematous. On the right side there were two imperial pints of serum in the sac of the pleura. There were bands of adhesion at the posterior part of the lung, and, with the exception of the upper part of the upper lobe, the right lung was compressed. The heart was healthy and there were coagula of blood on the right side.

Abdomen. The liver reached from the 5th rib to three or four inches beyond the margin of the ribs, and almost to the crest of the os ilium; it was mottled red and white, and its texture was softened. There was a rosy tint of the mucous coat of the stomach and the follicles were distinct; the tunic was healthy.

The intestines, small and large, were much contracted but healthy in structure. The spleen was healthy.

Pneumonia. Gangrene of the Lung. Chronic Laryngitis.

CASE XCIX.—*Delirium tremens complicated with Pneumonia. Great portion of the right lung in a state of hepatization.*

John Anderson, ætat. 45, Seaman, H. C. R. Ship Hastings. From the 27th October to the 2nd November 1842, was under treatment in the General Hospital for diarrhœa. After free living in the bazar for some days, he was re-admitted on the 13th November complaining of dysenteric symptoms attended with pain of the right hypochondrium impeding full inspiration; he had short cough with pyrexial symptoms and tremulous hands. He was entered in the hospital register under the head hepatitis. As delirium tremens seemed to impend, depletion was avoided, sinapisms and a blister were applied to the side, and ipecacuan. and blue pill with a small quantity of opium exhibited at intervals. On the 16th he was reported to have been delirious all night, walking about the ward.

The skin was hot and dry and the pulse frequent and easily compressed. The head was shaved and cold applied, and camphor mixture with antimonials exhibited. Towards evening, the breathing became oppressed and he died at midnight.

Inspection six hours after death.

Chest. Almost the entire of the right lung was in a state of red hepatization, other viscera sound.

Abdomen. Liver considerably enlarged but tolerably natural in texture.

CASE C.—*Pneumonia coming on insidiously during a course of excessive drinking. Extensive hepatization of both lungs.*

Henry —— ætat. 30, Clerk in the Military Auditor General's office. Was admitted into the European General Hospital at 8 P. M. of the 26th May 1843. It was stated that he had been drinking to great excess for some days previously; that the day before admission, he began to complain of pain at the margin of the left false ribs shooting through the chest. These symptoms continued on admission and the pulse was small and thready; the respiration hurried; and over the anterior part of the chest there was a general sonorous and sibilous rale; tongue white and dryish. A large sinapism was applied to the epigastrium and chest, and camphor mixture with spirit. æther. nit. was given every second hour. On the following morning the dyspnœa was urgent and the surface clammy. He died at 7 A. M.

Inspection five hours after death. *Chest.* The lungs did not collapse and there was no effusion into the pleural sacs. The posterior parts of both lungs were in a state of red hepatization for a very considerable extent and gave out much frothy sero-purulent fluid. The remaining portion of both lungs when incised gave out also much sero-purulent fluid and there were here and there circumscribed portions in a state of red hepatization. The mucous lining of the bronchial tubes was vividly red. Heart healthy.

Abdomen. Liver much enlarged; the mucous lining of the stomach was mottled red, here and there, but to no great degree. Other viscera healthy.

CASE CI.—*Pleuro-pneumonia. Chronic grey and red hepatization of the right lung terminating in gangrene.*

John Skinnell, ætat. 33, a Serjeant in the Grand Arsenal, was admitted into the European General Hospital on the 16th August 1843, suffering

from acute pain of the right side of the chest, which had come no suddenly and which prevented free motion and full inspiration. He was bled at the arm and leeched several times, and on the 19th, symptoms of delirium tremens came on and continued till the 22nd. Now he did not complain of pain of the side, but he was troubled with cough attended with muco-purulent expectoration, and on the 25th, the respiration anteriorly on the left side was puerile and on the right side about the nipple, there was mucous rale, and superiorly the murmur was also puerile. He continued till the 10th September, suffering more or less from cough with occasional febrile accessions and muco-purulent expectoration in small quantity; when on the 10th he expectorated 5 or 6 ounces of purulent fluid. On the 12th, on percussion of the right side of chest posteriorly, there was slight dulness, and about the scapular region there was large crepitus and increased resonance of the voice. On the left side posteriorly there was sibilus with large crepitus at the base.—From this time till the date of his death (the 25th October) he continued troubled with cough, losing flesh and latterly suffering from dyspnœa. The expectoration in the twenty-four hours, in quantity ranging from four to twelve ounces, generally had the appearance of pure pus, at times however it had a greyish tinge and was thinner; and on one or two occasions he complained of the extreme fœtor which attended its expectoration. Febrile accessions were sometimes observed, but always moderate. The stethoscope was not used after the 12th September.

Inspection five hours after death. The body was considerably emaciated.—

Chest. Old adhesions bound the right lung, throughout, to the parietes and were strongest posteriorly and to the diaphragm. The posterior and central parts of the right lung throughout its greatest extent were in a state of hepatization, part grey and indurated, part red, with several gangrenous portions broken down into dark grey cavities, and giving out a gangrenous fœtor. The left lung was also very adherent and gave out much sero-purulent fluid when incised, and pressed; it was also in parts in a state of red hepatization but had not advanced to gangrene. There were opaque patches on the surface of the heart.

Abdomen. The viscera were healthy; the liver perfectly so and very slightly adherent to the diaphragm.

CASE CII.—*Cholera, collapse recovered from, followed by Pneumonia and Pericarditis.*

Robert Morrison, ætat. 43, Seaman of the barque Barbara, was admit-

ted into the General Hospital at 11 A. M. of the 2d June 1842, having been taken ill in the course of the night with symptoms of Cholera. The symptoms were not urgent and after rallying from the state of collapse, on the 3rd, he complained of an uneasy load at stomach and on the 4th of pain of chest. On the 5th the pain of right mammary region was acute. He was leeched and antimonials were exhibited. On the 6th the pain was nearly gone but towards evening it had become aggravated and was attended with short cough; a blister was applied and the antimonials continued. On the 7th, 8th and 9th, he complained chiefly of weakness, and on the last day there was considerable dyspnœa. He died on the 10th.

Inspection five hours after death.

Chest. The right lung was throughout completely solidified being in a state of red hepatization, and when incised giving forth much blood-tinged serum. The pericardium contained several ounces of sero-puriform fluid; the surface of the heart and inner surface of the pericardium was coated with a thin granular firm layer of lymph.

CASE CIII.— *Ulcerated sore throat, in all probability Syphilitic, associated with chronic Laryngitis of twelve months duration. Larynx almost filled by a firm granular substance, adherent to the mucous membrane.*

James Redman, ætat. 30, Seaman, ship Catharine, was admitted into the General Hospital on the 19th July 1841, with ulcerated sore throat, occasional cough and soreness across the chest, but the previous history of the patient is not recorded, nor is the particular situation of the ulcers described. On the 25th August it is thus noted, "Complains chiefly of pain in the course of the trachea, in the line of the sternum, aggravated by an almost impeding deglutition. Respiration difficult and attended, on inspiration, by a tracheal ronchus. Has frequent cough; the expectoration seen is clear and frothy; the voice husky.—There is a good deal of vascularity of the pharynx with superficial ulceration; great part of the uvula and the pillars of the palate are absent. Skin cool and moist; pulse 92, of good strength; tongue clean; bowels reported regular. *Physical Signs.* The chest is clear on percussion but the sounds under the stethoscope are obscured by the loud tracheal ronchus; there are however no distinct moist rales." Lunar caustic blisters were several times applied over the trachea. Anodynes, diluted nitric acid or small doses of quinine, were given, and for some days, submitrate of bismuth to relieve heart-burn

of which he complained, was used, and on the 13th September he left the hospital very much improved in health and quite free of the distressing symptoms. — Re-admitted on the 5th October, with recurrence of sore throat, ulceration of left tonsil and of the right side of the posterior fauces; had cough and was hoarse. Much variety of treatment was used and the ulcers began to clean about the 6th November, but as they improved, the signs of tracheal irritation became aggravated. About the 23rd December, dysenteric symptoms came on, and as these increased in severity, the urgency of the disease of the larynx and trachea lessened. Subsequently he again improved and was discharged on the 13th January, 1842. Re-admitted on the 28th January with recurrence of dyspnœa and tracheal cough and loss of voice. No ulceration of the internal fauces. He continued in hospital suffering from distressing dyspnœa and gradually losing strength, when on the morning of the 7th August 1842 he was found dead in bed.

Inspection fifteen hours after death, made and reported by Mr. Assistant Surgeon J. Peet.

Both lungs gorged with venous blood; ramifications of bronchi filled with mucus and presenting patches of congestion. Lining membrane of trachea studded with patches of congested vessels but without alteration of structure. On opening the larynx, the cavity was found nearly filled with a firm granular substance, projecting irregularly from the mucous membrane; between some of the projections, there were ulcers of some considerable size, and of various shapes. The growth from the mucous membrane appeared to be attached equally to all parts. The glottis was swollen and œdematous; epiglottis ulcerated, and partially destroyed. In no part of the air passages below the cricoid cartilage were there any ulcers.

Abdomen. Stomach distended with flatus; intestines healthy. Liver large, but unaltered in structure. Other viscera presented no abnormal appearance.

CASE CIV.—*Gangrene of the lungs, without condensation or hepatization.*

Frederick Ritch, a marine of H. M.'s Ship Endymion ætat. 20, suffered from fever in Bombay in July 1841, a time when many of the marines of that ship died from fever, typhoid in its character. The ship went from Bombay to the Persian Gulf, thence to Aden, where Ritch was invalided and sent to Bombay. He never recovered from the conse-

quences of the fever, was always on the sick list, chiefly with chronic dysentery; and labouring under that disease, he was admitted into hospital on 18th January 1842. The symptoms were urgent; frequent purging; florid tongue; febrile accessions; emaciation; doughy abdomen. He was treated chiefly with free opiates; never complained of cough, and died on the 21st February.

Inspection eighteen hours after death.

Chest. The lungs did not collapse, the anterior parts were inflated, the posterior œdematous. On the posterior part of both lungs, there was a green discoloured portion, which broke down readily under the knife, and gave out much greenish frothy serum; the cellular tissue was plainly disorganized, and the serum seemed to have been contained in a small cyst, rather than in the natural cellular tissue of the lung,—(gangrene with serous effusion into the cellular tissue of the lung, not preceded by condensation of that portion of the lung,—) No hepatization of any part of the lungs. Heart. healthy. *Abdomen.* The stomach much distended occupied the entire space between the ensiform cartilage, and umbilicus; its mucous coat was lined with adhesive mucus and presented throughout a dusky rosy tint, without softening. The liver rather enlarged, olive green in colour, and mottled; no abscess. The transverse portion of the colon was opened, the mucous coat presented numerous ulcers in different stages, many of them cicatrizing. Spleen natural. Kidneys healthy.

Diseases of the Heart, Aorta and Pericardium.

CASE CV.—*Scurvy. The heart much enlarged from dilatation of both ventricles and of the right auricle.*

Maxwell Inston, ætat. 25, after having been ill with scurvy for two months was admitted into hospital on the 31st December 1839. He was very sallow, emaciated, and reduced, with spongy ragged gums and discoloured patches on the extremities. For a short time he improved a little, then remained stationary; subsequently began to lose ground and died on the 1st March.

Inspection. Surface sallow; body much emaciated.

Head. The brain was quite pale and exsanguine, there was a veil of serum on its convex surface, and an ounce at the base of the skull.

Chest. Both lungs collapsed, but there was œdema of the posterior part of the left lung. The heart was very much enlarged, fully twice its

natural size, and the pericardium contained four ounces of blood-tinged serum. The enlargement was caused by dilatation of the cavities of both ventricles and, very much, of the right auricle. The right side of the heart contained large brown red fibrinous polypi and red tinged serum, which flowed out when the cavities were opened. The substance of the heart was pale, and the walls of the left ventricle were about three quarters of an inch in thickness. The valves and vessels rising from the heart were healthy.

Abdomen. The liver was healthy and of natural colour. The stomach contained many grapes which he had just eaten. The mucous coat was of rosy tint, but firm. The spleen was healthy. The kidneys pale buff colour. The cœcum was distended. Many of the mesenteric glands equalled a horse bean in size. The urinary bladder was distended.

CASE CVI.—*Chronic Rheumatism. Death from pericarditis with obscure symptoms. Diarrhœa, with the mucous coat of the colon with dark grey patches and streaks. Two or three ounces of serum in the cavity of the cranium; no head symptoms.*

Thomas Clarke, Seaman, ætat. 48, emaciated and of sallow complexion. From the statements which were sent to the hospital regarding this seaman, it appeared, that in the early part of 1838, whilst on service in the Persian Gulf, he was affected with gonorrhœa followed by phymosis. He was brought under the influence of mercury, and whilst in this state, was exposed to cold on the voyage to Bagdad, in the month of July 1838, and in consequence became affected with rheumatism. In March, April, and May 1839, he was affected with a copper coloured eruption; suffered from restless nights, and pain of the hips and thighs. He was treated with decoction of sarsaparilla and blue pill, till the gums became tender, and he was sent to Bombay for change of climate.

He was admitted into hospital on the 16th July 1839; he stated that he had suffered from diarrhœa during the voyage, but that it had ceased. He was sallow and emaciated, and suffered from pains of the lower extremities, stretching along the shins, increased at night, and attended with thickening in the course of the right tibia.

A variety of treatment was tried,—hydriodate of potass with decoction of sarsaparilla or decoction of cinchona; quinine with diluted sulphuric acid; infusion of chreat, with diluted nitric acid; chalk and mercury; dover's powder; rhubarb and soda &c. according to the state of the bowels; anodynes, chiefly the tincture of the muriate of morphia at bed time. The

nitromuriatic acid foot bath was also tried. The emaciation, the sallowness, and the pains, continued with occasional diarrhœa, till the 9th September when it is thus reported:—"Pulse feeble and skin moist, was frequently purged yesterday. ℞. quinine, hydriarg. c. creta. gr. ii. opii. ss. confect. aromat. q. s. ut ft. pil. to be taken thrice in the course of the day. *Vesp.* No return of bowel complaint; pulse feeble. He takes no food. He is depressed. Contin pilul. every four hours; let him have ℥ii. of mulled wine now, and let one ounce be continued every second or third hour with sago." 10th "Is asleep at present; one dejection in the night. Continue as yesterday. *Vesp.* Has taken wine four times and three pills; skin is now cold and pulse feeble, and the respiration is laboured; he makes no complaint of pain. The sounds of the heart are natural and the respiratory murmur is heard on both sides anteriorly. Applic. emplast. vesicat. magnum epigastrio. Apply heat to the extremities, and sinapisms to the feet. Continue the wine ℞. mist. camph. ℥i. carb. ammon. gr. x. tinct. zingib. ℥iss. ft. haust, to be taken every second hour." Died at 7 P. M.

Inspection twelve hours after death. Body somewhat emaciated.

Head. The vessels exsanguine. The convolutions of the convex surface of the brain were partially veiled with serum, and there were between two and three ounces at the base of the skull.

Chest. The cartilages of the ribs were ossified, and required to be divided by the saw. There were firm and old adhesions of the left lung to the costal pleura. The right lung did not collapse, it was emphysematous anteriorly, and œdematous posteriorly. In the pericardium, there were three ounces of turbid serum, and the lining membrane was generally dotted red. The serous covering of the heart was in places opaque, and pearly; at the apex and over the left auricle, it was dotted red. The cavities of the heart, and chiefly those of the right side, were somewhat dilated, but to little extent. There was no hypertrophy; there were fibrinous polypi in both ventricles, and the valves were generally more opaque than is usual.

Abdomen. The mucous lining of the stomach presented a rosy tint, but was healthy in texture. The liver somewhat enlarged, was indurated, and mottled red and white. The contents of the colon were feculent, much of its lining membrane was streaked and patched dark grey, but the texture was sound. The follicles were here and there distinct. The spleen and kidneys were nearly healthy.*

* The following case is annexed from its resemblance to that just detailed. The subject of it was in hospital about the same time, and the symptoms noted came on a few days after the unsuccessful issue of Clarke's case. My atten

CASE CVII.—*Pericarditis; the inner surface of the pericardium, and the outer of the heart lined with a thick layer of irregular lymph; also effusion of serum and displacement of the liver partly caused by the distended pericardium.*

John Devair, ætat. 25, Seaman, was admitted on the 12th November 1840. He stated that he had been ill for two months and a half, that his complaint began with pain of the abdomen shooting from the hypogastrium and the left side, thence through the chest. These symptoms were not attended with either diarrhœa or constipation or difficulty of micturition; but his statement was confused. He passed a restless night and on the 13th, the epigastrium was tense, resisting, and painful on pressure; and on percussion, the sound was dull almost to the umbilicus, and midway between the crest of the os ilium of the right side and false ribs, also extending into the hypochondrium. The breathing was a good deal oppressed; the skin above natural temperature; pulse 120, feeble and compressible; tongue pretty clean.

Physical signs. Anteriorly on the right side of the chest and below the nipple, the sound is clear on percussion. On the left there is much dulness, about the cardiac region, extending to the arch of the left false ribs and to the sternum; no bulging. Respiratory murmur on the right side anteriorly, good. On the left, clear but fainter, with a blowing

tion was at once arrested by the resemblance of the symptoms of collapse, and of much of the previous history of the two cases.

Chronic Rheumatism; metastasis to the pericardium. Recovery.

Adam Lowder, ætat. about 40, Serjeant, Nizam's Service, of broken habit from climate and sickness, was admitted into hospital for the second time on the 10th September 1839 ill with chronic rheumatism, affecting chiefly the ankles and head. On the 24th it was reported that "the ankles were less swollen and painful; headaches have ceased" On the 25th "was troubled last night with uneasy sensations about the back and chest; legs and feet more tumified." At the evening visit he had pain shooting from below the left scapula to the ensiform cartilage, and attended with much oppression and sense of faintness. The pulse feeble and skin cold; the sounds and impulse of the heart are feeble but not otherwise affected. The chest was blistered, sinapisms were applied to the feet and legs; he was cupped on the back; took calomel with tartar emetic and opium, finally, with ipecacuan and quinine, and the nitro muriatic acid foot bath was used. The chest symptoms decreased, the pulse became developed, the gums became affected on the 3rd October, and he was discharged well on the 14th.

sound in the line of the sternum; posteriorly on the right side, clear; on the left, fainter with occasional crepitus about the scapula. The action of the heart at the apex not increased, it is rapid and the two sounds are clearly marked; between the nipple and the sternum and extending to the right side, the action of the heart is more perceptible and the sounds are increased in loudness. In the line of the sternum there is an abrupt, sometimes clacking, single sound, mixing with the blowing sound of the respiration; (diagnosis marked) aneurism of the aorta at its base, with dilatation of the right side of the heart and effusion into the pericardium.

He continued suffering from oppressed breathing, the pulse frequent, small, and unequal, the surface sometimes above the natural temperature. There was a frequent short cough, a sense of weight in the line of the sternum, and chiefly at its lower part, with occasional paroxysms of pain shooting from the left side, upwards in the line of the sternum, excited by motion and eructation; when he turned on the right side, the pain affected the right mammary region; when he turned to the left, it was chiefly felt below the left false ribs. He was easiest on the back. Urine generally scanty and high coloured, was tested with heat, on one occasion, and found not coagulable. The abdomen was generally full and tense.

On the 20th the uneasiness of the chest and dyspnœa were increased, and he had suffered from rigors; the pulse was 100, very irregular, unequal with occasional intermission; the abdomen full and tense. Between the left nipple and the sternum, the action of the heart was perceptibly increased; and there was a very distinct fremissement, more distinct at that situation, than at the apex of the heart; (diagnosis marked) pericarditis, effusion of lymph on the surfaces.

There was now almost constant orthopnœa; pulse very feeble. On the 23rd the fremissement had ceased. He died on the night of the 24th. The treatment is hardly worth alluding to; he was cupped, leeched, blistered, took mercury with morphia, &c.

Inspection ten hours after death; body not much emaciated.

Chest. The pericardium completely occupied the anterior part of the chest and extended into the right side for some distance; its transverse diameter was fully ten inches, and it reached from the top of the sternum to the diaphragm, to which muscle it adhered firmly, as also to the inner aspect of both lungs. There were about twenty-two ounces of clear serum in the cavity of the pericardium. The inner surface of the pericardium was lined throughout with a layer of lymph, a line in thickness, with a

rough reticulated inner surface of dark red colour; this layer could be peeled from the pericardium with tolerable facility. The outer surface of the heart was coated with a similar layer of lymph, more firmly adherent however, and presenting a more irregular and reticulated external surface; where the greatest irregularity existed, thence (chiefly the posterior part) had passed thick bands of firm but friable lymph, about an inch or more in length, and which had connected the inner surface of the pericardium with the outer surface of the heart. The heart itself and the vessels were quite healthy.

The lungs with the exception of some old adhesions and some slight œdema were healthy, and there was trifling serous effusion, in the right cavity of the pleura.

Abdomen. The transverse colon much distended with air, occupied the umbilical region. The liver extended four inches below the sternum, and about three below the last right false rib, and also occupied a greater than usual extent of the left hypochondrium. The liver had been pushed thus lower into the abdomen by the distended pericardium. There was an abscess in the left lobe of the liver, lined with a firm membrane with flacculent surface; it was the size of an orange and was adherent to the diaphragm where opposed to the adhesions of the pericardium. The stomach was healthy. The cortical part of both kidneys were streaked white and red, and these organs were considerably enlarged.

CASE CVIII.—*Dilatation with hypertrophy of the left ventricle of the heart; disease of the aortic valves and ascending aorta.*

Pedro Vidauro, ætat. 32, a Frenchman of sallow complexion, who had made frequent voyages to India, and had generally enjoyed good health, was admitted into the General Hospital on the 23rd March 1839, twenty-two days after his arrival from Calcutta. He stated, that during the six previous weeks he had suffered from pain at the epigastrium, increased by pressure and shooting to the cardiac region, and left arm; that he was troubled with occasional short cough but did not suffer from palpitation; the pulse was 100 and wiry.

The following were the physical signs noted at the period of admission:

"There is an evident fulness over the cardiac region. The sound is dull on percussion between the nipple and the sternum, also, for three finger-breadths below the nipple, and for two, to the outer side, but there is no dulness above the nipple. The impulse is more forcible than natural, and is felt faintly to the right of the sternum. Both sounds of the heart are mask-

ed by bellows sound, which decreases from the cardiac region, and is not audible at the junction of the clavicles." He was bled to ℥x.; 24 leeches were twice applied to the cardiac region, and followed by a blister; tartar emetic solution was given in conjunction with tincture of hyosciamus; and from the 27th March, grs. ii. of calomel with ipecac. gr ss. and opii. gr. ¼ were given every night at bed time. Under this treatment, the symptoms were relieved, and on the 2nd of April he left the hospital with the intention of joining his ship, and proceeding to sea.

On the 8th April he was re-admitted. The uneasiness of the cardiac region had increased. 36 leeches were applied, and the antimonial mixture with hyosciamus again exhibited. On the evening of the 9th the pain was aggravated, and he was bled from the arm to six ounces. He passed a restless night. On the morning of the 10th, the pulse was 108, and irritable; the skin was above the natural temperature; the tongue clean; cough frequent and short; decubitus easiest on the abdomen. The physical signs were thus noted. "There is fulness of the cardiac region and dulness on percussion; the impulse is not very strong, and the sounds of the heart are masked by a general bellows sound. There is constant uneasiness increased by pressure at the margin of the right false ribs, and there is resistance and hepatic sound there."

About two hours after the above report, the breathing became much oppressed, the skin damp; the countenance pale, and the pulse feeble. A vein was opened but no blood flowed, and he died in about half an hour.

Inspection. Six hours after death. *Head.* There were about two ounces of serum in the cavity, and much blood flowed from the integuments and from the sinuses.

Chest. The lungs were pale and emphysematous, but not congested with blood or serum. In each sac of the pleura, there was about a pint of serum. In the pericardium, there was not much more than the usual quantity of fluid. The left ventricle of the heart was dilated to more than double its usual size, and was distended with blood, chiefly fluid, but the walls were not of more than natural thickness. The aortic valves were somewhat thickened. Above the valves, the artery was somewhat dilated, and its lining membrane thickened and irregular from ossified flakes, and spiculæ: this thickening extended to the arch of the aorta. The right ventricle of the heart was slightly dilated, but not distended with blood, and its tissues were in a natural state.

Abdomen. The liver extended about three inches beyond the margin of the ribs; its external surface was mottled dark red; but its cut sur-

face was of pale buff colour. The mucous coat of the stomach had a general rosy blush, (digestion was going on at the period of death) was mammillated, and was rather thicker and firmer in its texture than natural. The intestines, the kidneys, and the spleen were healthy.

CASE CIX. — *Dilatation and Hypertrophy of the left ventricle with disease of the aortic and mitral valves, and of the commencement of the aorta. Liver enlarged and mottled.*

John Garratt, ætat. 42, a Seaman admitted on the 29th August 1840, with confirmed disease of the heart. He stated that he had been thus affected for about twelve months, and attributed his illness to a fall into the hold of the vessel.

Physical signs. No perceptible prominence of the cardiac region. There was dulness on percussion in a line from the left nipple to the epigastrium; the impulse of the heart was strong, and the action tumultuous, and the sounds confused and masked by bellows sound. (The diagnosis marked) "dilatation with hypertrophy of the left ventricle; aortic valves diseased." He died on 4th November.

Inspection. Chest. The heart very much enlarged, occupied the entire of the anterior and lower part of the chest, and the apex was to the left of its usual position. The right side of the heart was distended with dark coagulated blood. The cavity of the left ventricle was about twice its natural size, and the walls were of rather more than their natural thickness; the mitral and aortic valves were thickened and gristly; the commencement of the aorta thickened, with its inner surface irregular from white deposit; the auricle was very much dilated, and the auriculo-ventricular opening much wider, and more patulous than natural. There was not much dilatation of the right ventricle, and the walls were of their natural thickness. There was no serous effusion into the cavity of the chest. Old adhesions bound the right lung to the costal pleura, and both lungs were spongy and without congestion.

Abdomen. There were about three pints of serum in the cavity. The liver was dark red in colour, irregular on its surface, and it reached as low as the umbilicus and crest of the os ilium, and when cut, shewed a mottled dark red and white marbled surface. The mucous coat of the stomach had a rosy tint, and was sound in texture. The spleen and the kidneys were healthy. The intestines were healthy externally.

CASE CX. — *Hypertrophy with dilatation of the left ventricle of the heart, ossific deposit in the aortic valves; general dropsy; scorbutic*

diathesis, probably traceable to a sea life, and the induction of mercurial action.

William Cain, ætat. 29, Seaman of the ship Thetis. On admission into the General Hospital on the 20th May 1842, he stated, that seven months previously he had been affected with inflammation of the bowels for which he was treated with mercury, and that whilst under the influence of that medicine, he caught cold and had ailed ever since, chiefly from cough and shortness of breath with hæmoptysis, and that under these symptoms he still continued to suffer. The face was puffed and pale, ;the abdomen full; the feet and legs anasarcous; the urine reported copious; the pulse was frequent and somewhat jerking in its beat; the tongue was clean but pale; the gums were spongy; the action of the heart was tumultuous with bellows sound; the impulse not very strong; but as the examination distressed him, it was not minutely entered into. On the 25th the urine became scanty and the dyspnœa increased, and an evening febrile accession, occasionally attended with vomiting, was added to the other symptoms. He died on the 1st June.

Inspection fifteen hours after death. *Chest.* There were several ounces of serum in the cavity of the left pleura, and adhesions connected the right lung to the costal pleura. The heart was much enlarged from hypertrophy of the walls, and dilatation of the left ventricle. There were ossific deposits with irregular surface, the size of a pea, at the edges of the semilunar valves of the aorta, and similar deposits were found in different parts of the mitral valve.

Abdomen. The liver of dark mahogany colour. The rest of the viscera apparently healthy.

Case cxi.—*Enlargement of the heart; firm adhesion throughout of the pericardium to the heart. Scorbutic diathesis.*

Alfred Gray, ætat. 17, Seaman of the ship Orator. After a voyage of six months duration, during which he had suffered from much sickness, chiefly rheumatism affecting the knee joints, he arrived at Bombay, and was admitted into the General Hospital on the 16th April 1842. He was emaciated and sallow, and the surface of the body was covered with petechial spots. The gums where somewhat swollen and discoloured; the abdomen was full, and the respiration hurried. The action of the heart was strong, and attended with heaving pulsation of almost the whole of the left side of the chest. There was dulness on percussion for a very considerable extent, around the cardiac region. The sounds of the heart were confused,

and masked by bellows murmur. The carotid arteries pulsated forcibly; the pulse at the wrist was feeble. He stated, that four years before, he had been ill with rheumatic fever, and that since that time he had frequently suffered from palpitation. The breathing became more oppressed, the face puffed, and he died on the 20th April.

Inspection at 2 A. M. The body emaciated, and the feet and legs œdematous.

Chest. Old adhesions connected in parts the pulmonary and costal pleuræ. The heart very much enlarged, occupied the anterior and part of the left side of the chest; and the pericardium adhered so firmly to the entire surface of the heart, by old cellular adhesions, that it could not be separated, but with great difficulty. The right ventricle contained red watery blood.

Abdomen. The stomach and intestines were considerably distended with gas.

CASE CXII.—*False aneurism of the aorta appearing above the sternum.*

Jose Maria, ætat. 39, of sallow habit, a native of Portugal, had suffered from a pectoral affection since October 1838, was admitted into hospital on 6th February 1839. "Rising above the junction of the right clavicle to the sternum, and passing about one-third towards its acromial end, is a pulsating tumour, stated to have been first noticed in October last and to vary occasionally in size; there is no pain and no tension of the integuments. Has dyspnœa and occasional short cough. These symptoms are increased on assuming the recumbent posture, when there is a wheezing sound heard with each inspiration; no strong action of the heart, nor in the course of the sternum; pulse full and firm; skin cool; states that his illness began with cold and sore throat, after recovering from which, the pulsating tumour appeared. He was bled three days since with relief. He continued in hospital for six days, suffering from frequent attacks of dyspnœa, for which small quantities of blood were abstracted from the arm at different times, and draughts of æther and muriate of morphia were given. It is noted in the report of the 12th, "at present orthopnœa; pulse of the right side feebler than that of left. There is strong action under the right clavicle, and in the line of the sternum."

At the level of the lower angle of the scapula, on both sides posteriorly, there is a wheezing sound, as if the air passed through a compressed tube. He died at 4 A. M. of the 13th.

Inspection four hours after death

Chest. From the commencement of the arch of the aorta, there ascended the sac of a false aneurism filled with yellow coagula; it was about the size of the fist, and reached to above the sternum. The communication with the aorta was by a circular opening, with rounded edges, and of nearly an inch in diameter. The opening was anterior to the going off of the arteries from the arch, so that the sac compressed the inominata and about an inch and a half of the left carotid. The arteria inominata had its coats thickened, and was dilated to the size of a large almond. The ascending aorta was generally dilated, and coats thickened, and in the inner surface irregular. The walls of the left ventricle of the heart much thickened; the valves tolerably healthy.

CASE CXIII.—*True aneurism of the aorta; died comatose; four ounces of serum, chiefly at the base of the skull.*

John Ross, ætat. 36, a Cook on board a merchant ship, was brought to the General Hospital on the 2nd July, and died in about five minutes after his arrival. It was stated that he had been taken ill with a fit on board, and had been brought immediately to hospital.

Inspection fourteen hours after death. Body stout. There was a free inguinal hernia of the right side.

Head. Vascular turgescence of the membranes was moderate; there were about four ounces of serum in the cavity, chiefly effused at the base of the skull, or veiling the convex surface of the brain.

Chest. The lungs did not collapse; they were emphysematous, but not congested with serum or blood. The heart was healthy in size and structure; the valves were healthy with the exception of slight thickening of the aortic ones. Commencing about half an inch above the aortic valves, occupying the ascending aorta and the arch, there was a true aneurismal sac, with the coats of the vessel thickened, and the inner surface irregular from cartilaginous deposition. The sac in its transverse diameter equalled that of the fist; it was about four inches, in its long diameter, and formed a cul-de-sac, above and behind, the vessels given off from the arch of the aorta. The upper portion of the sac contained a small coagulum. The vessels given off from the arch were healthy, and so was the descending aorta. There were about four ounces of serum in the pericardium. The abdominal viscera seemed healthy, but they were not minutely examined.

To be continued.

Article III.

The Annual Hospital Report for 1842 *of the* 18th *Regiment, stationed at Baroda.* By F. S. Arnott, Esq. Assistant Surgeon.

Presented by the Medical Board, May 1843.

Having so frequently reported my hospital practice, I was not prepared to furnish a report for the past year, and have consequently been obliged to frame one since the arrival on the 13th January of the Medical Board's circular requiring one from every Regiment. Being so unexpectedly called upon, and having so recently reported fully on cholera, the only disease which has raged at Baroda, with any severity during the year, I purpose to treat with great brevity the sickness of 1842, and to devote this report rather to a short review of the Medical History of the Regiment under my charge, during the time it has been at Baroda.

The cantonment of Baroda is so well known, that a minute description of it here might be deemed superfluous. I will therefore enter no further into the subject, than merely to state a few particulars, which may have had influence on the health of the Troops.

The Vishnamuntry skirts the eastern and southern sides of the camp, and divides it from the city of Baroda, * which is about a mile and half

* Baroda the capital of the Gaickwar's dominions and the seat of His Highness's Government, is a large and flourishing city, with a population estimated at from one to two hundred thousand. Within the walls there are two good wide open streets, intersecting each other and dividing this part into four rather unequal divisions ; each of which is again irregularly subdivided by innumerable lanes, almost all narrow, crowded, unclean, and ill ventilated. The houses however are substantial, dry, tiled buildings, of from two to four or five stories.

The suburbs again are more irregular, but more open and exhibit the same thorough disregard of cleanliness.

The lamentable consequences of this utter neglect of cleanliness and defec-

distant. Its course is excessively tortuous, and generally its stream is sluggish, but in the monsoon it is deep and rapid, and sometimes overflows the lower parts of the camp ; whilst in the hot weather it is almost dry, and consists only of a few stagnant pools. For the public cattle, and for washing, it is a great convenience to the camp, as is also a small tank towards the north west limit, but drinking water is entirely supplied from the wells, which are abundant, as well in the Sepoys' lines as in the Officers' compounds.

The depth of the bed of the river, which is about 50 feet below the level of camp, together with its proximity to it, would argue the ready escape of surface water from the lines, but the banks are in many places high, and the site of the camp extremely level, so that until drains were cut water found its way to the river very circuitously, and stagnated in many places. Some years ago, however, the whole camp was thoroughly and scientifically drained, and as the soil is loose and sandy, not a drop of surface water can now be seen an hour after the heaviest rain. To this I think may be attributed, the improved health of the Troops at a station formerly not by any means famous for its salubrity.

The pendals for the men are in parallel lines running north and south, and are comfortable tiled buildings, with little room for vegetation between them ; without any receptacle for the accumulation of filth, and traversed by drains wherever required. Except the eastern and western ranges, they are consequently well sheltered from the east winds and south-west monsoon.

The Hospital is a commodious, airy, tiled building, calculated to contain fifty patients, and situated on a bend of the river at the east end of camp. It has an enclosed verandah with glass windows and doors on the north aspect, and an open verandah to the south. At three corners are small apartments ; one used as a surgery, and the others for apprentices, &c. The outhouses are also good. The compound is elevated and dry, with a good descent on all sides ; but a good fence round it is much required, as it would add much to its neatness and comfort, besides keeping at a distance all stragglers and idlers, as well as cattle, that at present rove about at pleasure, and above all it would enable the guards to confine the patients to the Hospital compound, which at present is impossible.

tive ventilation, on the crowded population, are evinced in the annual visitation of ague and bowel complaints, and the melancholy ravages at other periods of small pox and cholera, which last disease, as is elsewhere stated, carried off nearly 11,000 individuals in the short space of one month in 1842.

The Officers are accommodated in separate tiled Bungalows, surrounded and divided from each other by strong hedges of Euphorbia, and each compound is intersected, according to the taste of the proprietor, by numerous hedges of Mhendy, which is reared here with great facility, whilst Neem, Mango, different species of Ficus and Tamarind trees, with a great variety of shrubs, exist in great abundance in all directions.

The seasons may be divided into the cold, hot, and rainy. The first lasting from the beginning of November to the middle of February, the second from that time to the middle of June, and the monsoon occupying the remaining period of the year. The cold season is not inimical to health. In January and February the weather is cool and agreeable to the feelings, and refreshing to the system; the crops in the neighbourhood of camp are reaped; the country is open; ventilation free, and though the alternations of heat and cold are considerable, the health of the Troops is good. In the hot weather the vicissitudes of temperature are still less; the soil is dry, devoid of vegetation, and no noxious exhalations are generated, and as might be expected, this is always the healthiest period of the year.

In the monsoon the atmosphere is raw and damp, the ground soon becomes saturated with moisture, and vegetation is rapid and exuberant; but immediately on the cessation of the rain, the days became hot and sultry, the deep sandy soil rapidly absorbs every particle of moisture, and vegetation, lately so luxuriant, as quickly decays. The sick list now becomes very heavy. In the succeeding months again the ready supply of water affords ample means of irrigation, which is taken full advantage of, for raising culinary vegetables, &c. which are then produced in great abundance. Though it cannot be doubted, that such redundancy of trees and enclosures must temper the climate, and moderate the heat and glare, as well as the effects of sudden atmospherical changes, it may readily be granted, that prejudicial consequences may also result from such luxuriant vegetation, particularly during and after the monsoon. It may be a question, however, how far these disadvantages and advantages counterbalance each other, but while the sources of the one are so obscure, and the other so apparent, it is not likely that any ordinary interference would induce individuals to deprive themselves of such luxuries, or to consult any tastes but their own. At the same time, however, I must observe, that there is no cultivation except in the Officers' compounds within the limits of camp, and the greatest attention is paid to the cleanliness of the lines and compounds, and much of what is considered superabundant vegetation, is removed once or twice every season.

The following will shew the average range of the Thermometer and prevailing winds for each month during the last five years.

Month.	Thermometer.			Prevailing Winds.
	Maximum.	Minimum.	Greatest diurnal range.	
January	88	59	20	East and N. East.
February	95	59	27	East and N. East.
March	99	69	24	N. E. and Westerly.
April	104	73	24	West.
May	105	83	18	W. and S. W.
June	101	79	16	S. W.
July	95	79	11	S. W.
August	91	76	9	S. W.
September	93	78	14	S. W. and variable.
October	93	72	18	West.
November	93	62	23	N. N. E. and N. W.
December	87	57	26	East and N. East.

Mean annual temperature 83
Annual range of Thermometer 58

***Quantity of Rain at Baroda, from* 1838 *to* 1842.**

Years.	May.		June.		July.		August.		Sept.		October.		Total.	
	Inches.	cents.	Inches.	cents.	Inches.	cents.	Inches.	cents.	Inches.	cents.	Inches.	cents.	Inches.	cents.
1838	5	"	5	10	12	"	3	4	1	14	"	"	26	28
1839	"	"	"	55	16	80	7	81	3	60	"	"	28	76
1840	"	"	10	67	8	40	1	15	2	20	"	"	22	42
1841	"	"	8	46	11	96	10	83	"	43	"	"	31	68
1842	"	"	5	95	16	76	10	"	11	92	1	50	46	13
Average five years	1	"	6	16	13	18	6	56	3	85	"	30	31	5

The 18th Regiment has now been five years at this station, and the following Table will show the degree and nature of the sickness in the corps during that time.

No. 1.

Years.	1838	1839	1840	1841	1842	Total.
Strength	778	911	1073	1078	Rt. wing 580	4420
Treated	989	1713	1864	1717	1027	7285
Fever	663	1376	1363	1174	602	5178
Died	10	9	14	12	3	48

No. 2.

The next Table will show the monthly average of admissions for the five years.

	January.	February.	March.	April.	May.	June.	July.	August.	September	October	November	December
Admitted	94	53	55	79	75	75	121	117	234	267	180	102

No. 3.

And I add another Table showing the proportion of deaths in each month, during the same period.

	January.	February.	March.	April.	May.	June.	July.	August.	September	October.	November	December	Total.
Deaths.	14	7	4	..	..	2	2	1	3	3	5	7	48
Of which occurred from . .	..	..	..	..	..	..	..	..	..	..	..	..	..
Cholera	1	..	..	..	..	..	..	..	1	1	..	..	3
Diarrhœa	..	..	..	..	..	..	..	..	..	..	..	..	..
Dysentery	..	1	2	..	..	..	..	..	..	..	..	..	3
Fever	11	5	2	..	..	1	1	..	1	1	5	6	33
Hepatitis	..	..	..	..	..	..	..	..	..	..	..	..	..
Other diseases	2	1	..	..	..	1	1	1	1	1	..	1	9

No. 4.

Table showing the prevailing disease at Baroda, in the 18th Regiment N. I. during the five years, with the proportion of deaths.

Prevailing Disease.	Number of cases of Fever treated in five years.	Number of Deaths.	Proportion of Deaths to cases treated.
Fever	5178	33	6½ per 1000.

During the five years no Officer died at Head Quarters; one who left Baroda after the rains of 1840 to take up an appointment in Bombay, lost his health and died at the Cape in May 1841. One went on sick certificate to the Neilgherry Hills in 1839, and returned to his Regiment

after an absence of two years ; and two others left Baroda for a change to Bombay, but after a short stay at the Presidency, were sufficiently recovered to rejoin the Regiment. There have been no casualties among the Officers' wives, and only one child has died during the five years.

From the first Table it appears, that the sickness during the five years, has been at the rate of nearly 165 per cent of the strength, and that the deaths have been at the rate at of about $\frac{1}{21}$ per cent of strength, and about $\frac{65}{100}$ of the men treated.

The next Table shows the comparative good health enjoyed by the Troops during the first half of the year, and how much it is deteriorated during the other half, the proportions being nearly 1 to $2\frac{1}{2}$, and these proportions are fully borne out if we assume, which virtually is the case, that the admissions in January are merely relapses, or the consequences of the sickness, in the preceding months.

This Table at the same time shows, that Fever is the prevailing form of disease, as upwards of seventy one in a hundred, or nearly three fourths of the whole, are Fever cases.

The sickly season commences generally about the middle of August, but some times as early as July, (as in 1841) and continues increasing up to the latter part of October or beginning of November, when symptoms of improvement gradually begin to manifest themselves, and by the end of the year, the sick list is reduced to moderate bounds.

In Table No. 3, I have given the number of casualties in each month of the year for five years, together with the diseases from which the casualties occurred, and as was to be supposed, from Fever constituting nearly three fourths of the total sickness, nearly three fourths of the deaths occur from that form of disease. The great degree of mortality that characterizes the month of January, is a remarkable peculiarity in the Table, that might not at first have been anticipated. No less than 14 out of 48 fatal cases, or upwards of a fourth of the whole number, happen in January, though the preceding Table shows a great diminution of admissions not only in that, but in the two preceding months. It might be inferred, that though the number admitted is fewer, disease now assumes a different and more severe form. This I have not observed, and I ascribe the greater mortality of January, chiefly to the exhaustion of long continued sickness, terminating in dropsy, diarrhœa, or visceral disease, under which the patients at last sink. Something, however, may also be attributed to the season ; for though the cold months, and January particularly, invigorate those in health, sickly and emaciated people with

broken constitutions, suffer much at this period, and sink in greater numbers than at any other. The diurnal variations of temperature alone, scarcely offer an explanation of this peculiarity, as they are not greater than in the preceding and succeeding months, but taken together with the strong piercing E. and N.E. winds, which so often prevail at this season, and which so often aggravate visceral disease, and bowel complaints, may be considered sufficient to account for it.

After these general observations, I will advert very shortly to the Hospital Practice of the year just ended. I have great gratification in finding that only three deaths occurred in 1842, with an average strength of 580, and a sick list of upwards of a thousand;—a degree of mortality amounting to little more than $\frac{1}{2}$ per cent of the strength, and $\frac{.9}{100}$ or little more than $\frac{1}{4}$ per-cent of men treated; an average which scarcely exceeds that of the most healthy stations of any country. But it is in regard to the fearful visitation of cholera in the month of July 1842, that I have reason to be thankful in a special manner, for the success of the arrangements made to prevent the invasion and diffusion in camp of that disease, when it was committing unheard of ravages among the inhabitants of the city, about $\frac{1}{2}$ mile distant. It is ascertained, that in one month it carried off little short of eleven thousand individuals; but I rejoice to say only four men of the 18th Regiment caught the disease, and of these every one recovered. The arrangements I suggested were fully and promptly carried into effect, and I believe were the means of saving many valuable lives, but as these measures, as well as my practice both in the town and camp, have already been laid before the Board in my Report on Cholera dated 27th September last, I abstain from entering on the subject here. To conclude this report, therefore, I will merely add a few remarks on fever, the only other disease that has prevailed to any extent, at this station during the year.

The Fever of Guzerat I have not found to be the formidable and intractable disease that it was formerly considered; on the contrary I look upon it as the most mild, and if taken in time, the most manageable form of fever, I have had any experience of. It is a simple, uncomplicated intermittent, and the utter want of any prominent or urgent symptom, is its chief feature. In the incipient disease, there is seldom any local affection to attract the attention of the medical man; there may be headache and functional derangement of the stomach and liver, during the paroxysm of Fever, but during the intervening period, the headache and irritability of stomach subside, and rarely indeed is there any indication of

structural disease, either in the cerebrum, the thorax, or abdomen. The only dangers I can mention as belonging to this disease, are its occasionally yielding very tardily to medicine, and great tendency to return, in which cases at a more remote period may be apprehended the usual consequences of ague, induration and enlargement of the spleen and mesenteric glands, terminating most frequently in protracted emaciation, dropsy, diarrhœa, and death.

Occasionally a case occurs of a man who has been exposed in the jungles to the eastward, or who may have been on escort duty, and in addition to the unavoidable exposure of a march, is without medical treatment for several days; such a case, of course, I do not include in the preceding description. Here we may expect a disease of a more severe description, and almost always complicated with some local affection, which demands the greatest circumspection. Cerebral congestion, which if not relieved soon terminates in effusion, is what in such cases I have generally observed; more rarely there has been Gastro-Enteritis; very seldom pulmonary disease.

As has already been observed, the fever generally met with, is the intermittent, and the most common type it assumes, is the tertian, and next in succession the quotidian and quartan. In many instances, however, and especially in protracted cases, it is extremely irregular in this respect, and the paroxysm occasionally occurs twice in twenty four hours, or on the other hand only once in 4,5,6. or 10 days. The paroxysm itself also, is at times equally irregular, the stages not following the usual course, or one of them being entirely wanting. These however are the exceptions to the common form, which is generally either the tertian or quotidian.

Treatment. If on admission the constitutional derangement is considerable, or symptoms denote determination to an internal organ, a general bleeding is had recourse to, and is either repeated, or succeeded by leeches to the part, according to circumstances, and these are again and again repeated, according to the urgency of the attack and the patient's strength, till symptoms are alleviated, or if possible removed. It is not often that such severe cases occur, but when they do, the chief part of the treatment is directed to the local determination until it is removed. Bleeding in the cold stage, I have not had occasion to practice during the year.

As heretofore, I have found the utmost benefit from evacuants, freely and repeatedly administered, as they more effectually, than any other class

of remedies, destroy that tendency to visceral congestion, which always exists. The plan of cure is, therefore, generally commenced with an emetic, followed by a purge: antimonials and calomel are then given for a short time; the action of the intestinal canal being kept up, by the frequent repetition of cathartics. After a healthy action is excited in the primæ viæ, bark or quinine with sulphuric acid may be safely given, but in many cases, these are not required, the fever seeming to cease, as soon as the balance of the circulation, has been established by evacuants.

To prevent a recurrence of the paroxysm, quinine of course is the usual remedy. It is given at first in doses of two grains, in powder or solution, with diluted sulphuric acid and water, three or four times a day, which may be increased to eighteen or twenty grains in the twenty-four hours. If the disease proves obstinate, arsenic or bark are tried, and it is sometimes a good plan to try them alternately, as they are not in this way as likely to lose their effects. By the kindness of some friends I have been enabled to try Warburg's drops, but whether it was that the medicine was old or not genuine I don't know, but in my hands it has uniformly proved perfectly inert: and I have never observed it to have any effect on the system whatever. I herewith send the last case in which I tried it. Mercury with a view to ptyalism is occasionally used, where the inaction of the hepatic system does not readily give way, but where it can be avoided it should not be pushed to any extent, as in certain constitutions it is productive of very serious after effects; as rheumatism with sleepless nights, want of appetite, and dropsy with tedious convalescence, and frequently unfitness for further service.

* Convalescence is assisted by light aromatic bitters and aperients,

* I append a short extract from my Report on the Hill Fort of Powanghur, dated June 1839, which to the European convalescent may appear interesting:—"As a convalescent station it possesses advantages well worthy of consideration; with a temperature fifteen or twenty degrees below that of the plain, its pure air, constant light breeze from the south-west, wholesome water, cool and bracing nights, magnificent scenery, and accommodation that might at small expense be rendered very comfortable, I consider it well adapted as a place of resort to those suffering from the debilitating climate and diseases of Guzerat, and feel convinced that it may be safely recommended, and might be often resorted to in cases of constitutional debility or slow recovery from disease, when a longer trip promising no greater advantages might be inconvenient or impracticable. To the inhabitants of Baroda it appears to me to possess incalculable advantages, from its extreme convenience and proximity to that station, and though I will not enter into comparison between it and the sea coast, I may add that there are many forms of disease for which it is equally adapted."

and I have found nothing more useful in this way than an infusion of creat with a small quantity of senna, with a little tincture of bark or some other tonic, added according to the circumstances of the case.

Supplementary to the Annual Report for 1842.

Disease.	Number admitted during the year.	Discharged.	Died.	Remaining.	Average age of patients.	Average number of days under treatment.
Fever . . .	602	583	3	16	27	7
Hepatitis .	"	"	"	"	"	"
Dysentery .	36	33	"	3	22	6
Cholera . .	7	6	"	1	28	11
Diarrhœa .	30	30	"	"	22	8

I am induced to add an extract from the diary of a very intelligent patient, who visited the place in April and May 1841. "A person must in such a barren field for occupation depend much on his own resources for amusement. The benefit to be derived from the change of climate is, I must say, the only inducement that can be held out for visiting Powanghur, and I can from experience say, that the benefit I derived from a residence there of almost two months, was decided and very great."

Article. IV.

Could the Natives of a temperate climate colonize and increase in a tropical country and vice versa? By Arthur S. Thomson, M. D. Assistant Surgeon, 14th Light Dragoons.

Presented, September 1843.

The soundest knowledge of human nature was evinced by Cortes, De Gama, and Albuquerque, in describing to their countrymen in glowing terms the wealth of the East and West Indies, and in proclaiming the advantages of colonizing in those countries, without at all hinting that the new regions were not well suited for their constitutions ; strong inducements, without any drawbacks, being in those days required, to make men undertake, the magnified dangers of distant migration. The constant intercourse which has since that period taken place, among the different nations of the globe, ought to have furnished us with an accurate knowledge of the climate and aboriginal inhabitants of different regions, and whether certain countries are adapted for the settlement of different races of men. The experience however of more than three centuries, has apparently not furnished us with that decided knowledge of the tropical parts of the world, and the susceptibility of those countries for European colonization, which we ought to possess ; that this is the case may be observed from the following extracts.

Mr. Crawford, late British resident at the court of the Sultan of Java, published in 1820, a history of the Indian Archipelago. By profession a medical man, he was in 1808 nominated to the Medical Staff of the Prince of Wales Islands, and after a stay of three years at that station, Lord Minto, from Mr. Crawford's knowledge of the language, and manners of the Natives, employed him in a public capacity in the expedition which conquered Java in 1811. I quote this account of Mr.

Crawford to give weight to the following opinion of his on the settlement of Europeans in the tropics. "In the unappropriated land" Mr. Crawford observes "of the Indian islands, there is abundant room for the colonization of the human race, and unlike the desert promontory of Africa, or the superior but isolated and distant continent of Australia, they would find abundant objects to engage their industry ; the first settlers feel indeed the inconveniences of the heat, but the constitution of their descendants, immediately adapts itself to the climate which they are born to inhabit." *

It has been proposed with the view of rendering our Indian possessions more secure, to form European Colonies in Hindoostan, but many well informed men have objected to this, thinking that a race would be produced which at some future day might imitate the Spanish and Portuguese settlers in South America by throwing off the yoke of the mother country. Sir John Malcolm, an officer who had resided forty years in India, in giving his opinion as to the advantage of raising recruits in India for the Army, by encouraging the settlement of British Subjects in the country, states, "I cannot think that such settlers would ever fill our ranks with recruits, equal to those which are freshly imported from England, and there is no other mode in which I can contemplate any benefit to the public interest as connected with the Army from such colonization, and I should apprehend that superior pretensions, and the place they occupied in the community, combined with the difference of habits and religions, would be likely to create a hostility in the minds of the Natives, which would far outbalance any support of a military nature, that could be anticipated from such settlers." † But Sir John Malcolm never doubts the most important circumstance, viz. whether the European settlers could live and produce pure offspring in India for three generations, although in his political history of India when alluding to the colonization of Europeans in India he allows, that in a few generations, from the climate and connexion with low ignorant women, the settlers are likely to become degenerate.

Experience on the subject of colonies is apparently learned but slowly, and even when a settlement is found to be unfortunate, the true cause of the failure is rarely given, should the truth be opposed to the wishes or preconceived theories of those concerned. The failure of several colonies

* Crawford's Indian Archipelago.

† The Government of India, London ; 1833.

in Africa did not prevent others being made, nor did the experience acquired at the pestilential shores of Bulama, convince the Directors of the Association that the climate was the chief cause of almost all the settlers dying.

These general observations I have entered on, and others might be quoted, to show the practical usefulness of an extensive inquiry into the subject. The limited extent of the books it has been in my power to consult, has prevented me making the following sketch any thing but a rough outline. In the examination of the question I shall first inquire into those

Colonies formed by the inhabitants of temperate climates in tropical regions.

In the East Indies. The successful voyage of Vasco de Gama opened to the different European Powers a new road to India, by the Cape of Good Hope. The Portuguese, Dutch, English, French and Danes, entered on this untrodden field for enterprize, and at different periods, settlements were made by those nations, either on the continent of Asia, or on the islands situated in the Indian Ocean.

The Portuguese and Dutch were the most zealous settlers; both those nations colonized very extensively in India nearly three hundred years ago. It is almost certain that most of the followers of de Gama and Albuquerque were unaccompanied with females, and that on their arrival in India they intermarried with the Natives; still for many years after the settlements had been formed in India, the Portuguese and Dutch arrived annually at certain seasons in great numbers from their native land, and I cannot therefore refrain from thinking that many females accompanied those latter settlers; and I draw this conclusion from the manner in which the Portuguese colonized in South America, and also from the desire which most men have, to associate with females of their own country or nation. It is difficult to give any idea of the number of the Portuguese who settled in India, but the number must have been very great. Mr. Jonathan Duncan, in the fifth volume of the Asiatic Researches, gives an historical account of the coast of Malabar translated from a native work, in which when alluding to the Portuguese it states, "and they became rulers in all the towns and cities, and swarmed therein and reared fortresses in numerous places." In the present day (so far as I am aware) there is not one pure descendant of either the Dutch or Portuguese, who settled in India two hundred years ago. The races of men in India which now

boast of Dutch and Portuguese descent, are both mentally and physically degenerate, and they present a good example of the injurious effect of climate on the descendants of Europeans in India, although with them, their constitutions are rendered more adapted to the climate by a union with the aboriginal inhabitants. The French settlement at Pondicherry and the Danish settlement at Tranquebar, are both in a state which can give no favourable example of the advantage of the colonization of Europeans in India.

The inhabitants of Great Britain have lived and have been in possession of parts of India long enough to enable us to draw some conclusion on the influence of the climate on them. The mortality which occurs among the British soldiers is nearly four per cent annually, but this amount of death cannot entirely be attributed to the climate, as the Bengal Civil Servants die only at the rate of two per cent per annum, * and as this fact is founded on forty years observation it must be allowed to be an approximation to accuracy. The excess of the mortality among the soldiers above that of the civil servants, is partly caused by the civil servants leaving the country for change of climate when they fall sick, and it therefore exhibits the least injurious effect of the country on men who can supply themselves with every comfort which is necessary for protection from sickness. The mortality however occurring even among the civilians, is nearly double the amount of death which takes place, among the same class of men, living in England.

From what has therefore been observed of the English in India, it may be concluded, that but a small number of those who come out in the prime of life resist the climate entirely, and few reach an advanced age; that their offspring will rarely reach maturity unless removed to a temperate country, and should the children of the English not be removed to a climate in some respects analogous to that of their forefathers, they become stunted in growth and debilitated in mind; the second generation of English will be in every respect worse, and is there on record a pure third generation of Indian British progeny ?

The following three examples of successful migration or colonization in India, although geographically from a temperate to a tropical country, yet the transition of climate was so slight as not to produce any obvious injurious effect; for after this manner the human race must have been diffused over the surface of the globe:—

Ist The ancestors of the Parsee race of men at present settled in India

* Mr Prinsep, Secretary to the Bengal Government.

were originally inhabitants of Persia. Driven out of that country in consequence of refusing to embrace the Mahomedan religion, they first retreated to the deserts or the mountains of Khorassan ; many years afterwards they migrated, first to the island of Hormuz where they remained fifteen years, and afterwards to the island of Diva where they abode nineteen years ; from this island they embarked and landed on the Continent of India A. D. 717. The Parsees in Western India are sprung from this stock, and their present numbers are estimated at fifty thousand.* They are increasing in numbers and are the most enterprizing race in Western India.—

2nd Along the Malabar Coast of the Peninsula of India, there are numerous colonies of Christians, and tradition gives them the title of the Christians of St. Thomas ; their origin is doubtful and is disputed ; in outward appearance they almost resemble the natives of the country. In the neighbourhood of Cochin on the Malabar Coast there is a race of men denominated white Jews, and they are supposed to have settled in the country not long after the destruction of Jerusalem†.

3rd There are about fifteen millions of Mahomedans in India ‡, the descendants of those who either settled in India after the different successful Mahomedan invasions, or were attracted from their own country by the more fertile plains of Hindoostan. This race is increasing in India and appears well suited to the climate.

European Settlements in the Indian Archipelago.

The large and numerous islands in the Indian Archipelago, having land fertile as the plains of Hindoostan for cultivation, and thinly peopled with inhabitants, are recommended by Mr. Crawford as countries well adapted for European colonization. "The example" Mr. Crawford states "of the vigorous race of genuine European blood bred in the hot plains of South America under the very line, would seem satisfactorily to prove, that the long entertained notion, that the European race undergoes from the mere effects of Climate, a physical degeneracy when transported to the native countries of the black or copper coloured races, is no better than prejudice ;" and Mr. Crawford therefore strongly recommends Europeans to settle on these islands.

The Dutch and Spaniards in the present day are the only European races now existing as colonists in these islands. The principal Dutch set-

* Wilson's Parsee Religion. 1842
† Buchanan's Christian Researches.
‡ British Empire in the East.

tlements are in Batavia, Borneo, Sumatra, Celebes, and the Molucca Islands. Although these settlements have existed for so many centuries, the number of the white population is extremely small and consequently their increase cannot be reckoned. In all the Dutch colonies the nature of the climate is confirmed by the above statement, and I doubt if there be one person of pure Dutch descent in the Archipelago, even of so late importation as three generations. The largest Dutch settlement is in Java. The fatality of this Island was sadly experienced by the British during and after their conquest of the place, and the Army now kept up by the Dutch for its protection suffers much also from the climate.* Lord Kames in his history of man † states "the offspring of Europeans born in Batavia soon degenerate; scarce one of them has talents sufficient to bear a part in the administration; there is not an office of trust but must be filled with Native Europeans."

The *Spanish Settlements* consist of the Phillipine Islands. Although established so early as 1564, they at present possess a very small European population, estimated at not more than three thousand. This fact proves there must exist some cause which prevents the increase of the Spanish settlers, and this is rendered more obvious when it is considered that these settlements have existed for upwards of two hundred and fifty years, and have enjoyed during that time a frequent intercourse with the European continent.

The group of the Nicobar and Andaman Islands in the Indian ocean, have been three times colonized by Europeans. The Danes in 1756 formed first a commercial settlement, and in 1768 a Missionary establishment, but both attempts were abandoned on account of the climate. The English with the object of affording supplies for their ships made settlements at two places in the year 1791, but both stations were abandoned on account of the climate.

In one or two islands in the Indian Archipelago, which were formerly colonized by Europeans, and which are now nearly almost abandoned, a few people exist who pride themselves on European descent. With the vices of the Europeans and the failings of the natives, these half-castes, in place of acting as a stimulus for the colonization of the islands, rather tend to act as warning beacons to prevent others from settling; for if a European gives the question a moment's consideration, he must see, that either his children must in a few years cease to exist, or what is worse,

* Earl's Eastern Seas.

† Sketches of the History of Man, three volumes

by a union with a native woman, his offspring will acquire all the infirmities of the European and Asiatic races.

The Island of Mauritius.—More favourably situated than any of the islands in the tropical parts of the Indian Archipelago for the settlement of Europeans, is the island of the Mauritius. Bordering on the temperate zone and possessing a comparatively genial climate it has been colonized for a length of time. The slow increase of the population indicates that the climate is not peculiarly favourable for the propagation of the settlers.

In 1767 the white population in the Mauritius was				3163
1797	Ditto	Ditto	Ditto	6239
1817	Ditto	Ditto	Ditto	7375
1827	Ditto	Ditto	Ditto	8111 *

The increase here exhibited cannot entirely be attributed to the births, as fresh settlers are frequently arriving in the island, and it is usual for the rich inhabitants to give to their children the benefit of a European education, a change which tends to lessen the injurious effect of the climate.

The British soldiers quartered in the island, die in the proportion of three per cent per annum, an amount of death which is about double what occurs in temperate climates, an ample reason of the slow increase of the white race, and a sufficient proof that a vigorous population can almost never exist. These remarks may be applied to the French Island of Bourbon, situated in nearly the same latitude.

The Sychelles is the name given to fifteen small high and rocky mountains, near the Island of the Mauritius. About 1768 the French formed a settlement on the largest ; the colony has gone on increasing, but whether from births or fresh arrivals I cannot say.—In 1825 the white population in all the islands was 582. †

Colonization of the tropical parts of Australia. — The Northern parts of Australia which are situated within the tropics have been proposed and suggested from their proximity to the Indian Archipelago as favourable regions for the formation of a European Colony.‡ It has also been proposed to form a penal settlement on this portion of the continent. § Voluntary emigrants may select any country they please to settle on, but no British Government could propose a country situated within the

* Martin's Colonies.
† Owen's Voyage to the Coast of Africa.
‡ Earl's Eastern Seas.
§ Transportation and Colonization, pamphlet.

tropics as a penal settlement, without openly avowing their object to be not solely transportation, but also to increase the sufferings of the offenders by exposing them to a greater amount of sickness, and death, than they would experience in a country suited by nature for their constitutions.

European Colonies in Tropical Africa. — Various attempts have been made at different times, by several European nations, to colonize in the tropical parts of Africa. These attempts may be said to have all failed, and although some forts are at present kept up along the coast, still the endeavour at colonization may be said to have ceased.

One of the most unfortunate attempts to colonize in this part of the world, was made by the English under the command of the celebrated Captain Beaver. On the 14th April 1792, 154 men, 57 women, and 64 children, in all 275 souls, left the shores of England to settle in the African Island of Bulama, which is situated about north latitude 11° 36′ and is estimated to be seven leagues in length, by from two to five in breadth. The emigrants arrived at Bulama about the commencement of the rainy season, and they immediately erected a log house; not many days had elapsed before sickness became prevalent, and towards the latter end of October, disease and death had made sad ravages, among the numbers, and on the discipline of the emigrants. About the end of September the establishment was reduced to fifty eight, of whom thirty were sick. Thirty of the colonists embarked for England about the middle of November because "it was death to stay" in the colony, and on the 1st of December the whole settlement now reduced to 28, was sick. On the 29th November 1793, which was little more than a year from the occupation of the island, the few remaining emigrants, finding they were hoping against all hope, left the settlement for their native land. Of the 275 colonists who embarked from England, few were so fortunate as to return, and of the thirty who abandoned the Island, a large majority expired on the passage or had contracted incurable diseases.

The cause of the failure of this sad attempt at colonization, was the deadly climate, but so completely are men liable to overlook the true cause of any misfortune, should that cause happen to be opposed to their wishes, that we find Captain Beaver, on his being requested by the Bulama Association, to give his opinion of the cause of the failure, and of the probability of future success, sending in a statement concluding with the avowal "that success might be commanded, provided greater firmness was shown by those who go out, and those who remain at home than had been exhibited in the late expedition." For my own part I do not see what

greater firmness could be shown by colonists, seeing that most of them gave to the experiment their lives. Captain Owen in his survey of the African Coast in 1825, went on shore to visit the state of the Beaver settlement; not a vestige of the establishment was found in existence, the spot almost insulated with mangrove creeks, was overgrown with trees, shrubs and ant-hills. The Portuguese have lately made a settlement in the Island, although remonstrated against by Colonel Findlay then Governor of Gambia.

Fernando Po.—The unsuccessful attempt at colonization at Sierra Leone stimulated the British Government to form a settlement in 1827 on the island of Fernando Po. The high and mountainous nature of the island gave the prospect of a healthy climate, a hope which practical experience did not confirm. Of thirty European settlers taken out, nineteen died, and Colonel Nicholls the Governor, was three times attacked with fever in a very short time, after which the settlement was abandoned. I have inserted the above attempt simply to state that it ought never to have been made; the experience of others ought to have been an ample warning to ourselves. The Spaniards in 1778, wishing for some situation on this coast to carry on the slave trade, ceded another place to the Portuguese for the island of Fernando Po, and they endeavoured to form a settlement, but the unhealthy nature of the island and the hostility of the natives obliged them to relinquish the colony.

Madagascar.—The French nation have made frequent attempts to colonize the Island of Madagascar, or the small islands which surround it.* They have still three small stations. France has four times endeavoured to form a settlement on the island of St. Mary, which is thirty-one miles long and from two to three in breadth. In the first attempt the climate obliged them to abandon it, in the second they were massacred by the natives, in retaliation for some cruelties they had been guilty of. In 1821 they fitted out an expedition and took possession of the Isle of Madama, which is the third attempt to form a settlement on St. Mary. The settlers arriving in January, which is the commencement of the rainy season, were attacked with severe sickness, so that in three months their numbers were reduced from 290 to 130 †. In 1829 the French again endeavoured to form a settlement on Madagascar but with no success.

* Voyage to Madagascar, &c. by the Abbe Rochon.

† Owen's Voyage. Boteler's voyage to South Africa and Arabia.

Other examples equally unsuccessful to those quoted might be given of attempts at colonization in tropical Africa. The history of the Portuguese and Spanish colonies, from the days of their settlement at the celebrated Melinda down to more modern times, is a subject full of interest in many ways; in one point it shows the spirit and energy which the Spaniards and Portuguese fought, against a deleterious climate, more fatal, than the most desperate enemy.

European colonies in Tropical America.— Shortly after the discovery of the new world, the Spaniards, Portuguese, English and other European nations, colonized in South America, into the present state of some of their settlements I shall now briefly examine.

Spanish Colonies.—Ten years after the discovery of America, the whole of the continent from North to South, was traced out by European navigators. The Spanish nation, anxious to procure every advantage, which the country afforded, were the most active in the field of American discovery, conquest, and colonization. They first took possession of several of the West India Islands, and after having extirpated the aboriginal inhabitants of these islands by their cruel Government, they abandoned most of them, for their more extensive possessions on the continent. Mexico, Cuba, Guatimala, Puerto Rico, Colombia, &c. are the chief colonies planted by the Spaniards in this part of the world. The Colonists on the continent, have lately emancipated themselves from all dependence on the mother country.

Humboldt in his personal narrative gives the following abstract as to the state of the white population, in the following countries of Spanish America.

Europeans and descendants of Europeans, without mixture of Negro and Indian blood, the pretended race of Caucasus;

Mexico contains a white population of	1,230,000
Guatimala Do. Do. Do.	280,000
Cuba and Puerto Rico	339,000
Colombia	642,000

This information regarding the population of the above countries given by Humboldt, although not of very recent date, is even in the present day reckoned, as accurate, as any statistical data, which modern writers have been able to contribute on the subject.

Mexico. This extensive country was one of the first conquests made by the Spaniards on the continent of America. The judgment and daring of the intrepid Cortes, the hero of Mexico, forms a history which no one can peruse without admiration and regret. Only one-third part of the whole surface of Mexico is situated within the tropics, so that the greater part of the one million and a quarter of white people, are living entirely within the temperate zone. The greater number of the white population in the tropical parts of Mexico live in the elevated regions, and as four thousand feet above the level of the sea gives to the atmosphere the coolness of the temperate zone, most of the inhabitants, are therefore, not in a tropical heat. In the neighbourhood of the capital of Mexico, the ordinary mean temperature is about the same as that experienced at Rome, * which is less than the heat in the southern parts of Spain. It is only therefore in the low parts of the country, which are situated along the coast that a true tropical heat is experienced and in those regions, the Spaniards are not able to live and keep up their original numbers. When Europeans or their descendants, reside, during the hot season in the towns along the coast, yellow fever often breaks forth and proves very fatal. Thus at Vera Cruz the population which is estimated at 16,000 inhabitants, is often swept away by the yellow fever.

Guatimala contains a white population of 280,000 ; but this estimate according to late authorities is much too high. About the year 1829, according to Thompson † the country contained of Europeans or perfect whites, not more than five thousand. Guatimala is about twice the extent of the British islands, and although not elevated so much as the table land of Mexico, yet it possesses elevations which produce the climate and fruits of a temperate zone. I am unable to ascertain whether the white population are merely temporally settled in the country for the purpose of working the mines or pure descendants of the Spaniards. The sea coast is hot and moist, and as the country is mountainous, rain falls often and in large quantities during the whole year. The sea coast proved extremely unhealthy to the first Spanish settlers, and in the official Report of Government, regarding the military defence of Guatimala, after mentioning the different points defended, the report states, " the first enemy that the European has to encounter, is the climate;" an ample proof that its character for insalubrity is well established. ‡

* Malte Brun.

† Narrative of an official Visit to Guatimala London 1829.

‡ Malte Brun, Murray's Geography. &c.

Colombia is a large thinly inhabited country having the Andes running in three parallel lines through its centre. By Humboldt the white population is estimated at 642,000. Most of them live in the elevated regions, where the climate is completely temperate, while the neighbouring sea coasts situated within the tropics are very unhealthy. Malte Brun states, in allusion to the Spanish Colonists settled in Colombia, "This district suspended as it were in the air is a little Europe, surrounded with an African belt health reigns; throughout it, while fevers and death dwell around it; if the Americans defend the ascent, where every position is in their favour, the battalions of Europe must perish without a battle."

Cuba. This is the largest of the West India islands; Diego Velasquez one of Columbus' companions in his second voyage in 1511, landed with three hundred followers on the island, and without the loss of a man, he annexed this extensive place to the Spanish monarchy. The white population is stated by some at 257,000. * In 1827, they were estimated at 317,000. * No conclusion can be drawn from the state of the white inhabitants of this island as to their increase or decrease by births; for during the last thirty years, and more particularly after the separation of the continental colonies from Spain, colonists have been encouraged to settle in the island, and Cuba has therefore been adopted as a place of refuge by a large number of the expelled Spanish residents of the continent of America, who adhered to the European Spanish Government.

Puerto Rico. This island extends about 120 miles in length and 40 in breadth. In 1508 a settlement was first made on it, by Juan Ponce de Leon, but it was much neglected until about the middle of the last century. Since then, it has rapidly increased in wealth and population. Colonel Flinter in his account of the island states, that the white population in 1828, was 150,311, that the number of deaths was 21 per thousand, and the births 37 per thousand, consequently there was an increase of the Spanish progeny of 16 souls per thousand; during the year 1828. There can be little doubt that the white population has increased much during late years, for this island, like that of Cuba, hasafforded a home and protection to several thousand colonists expelled from the American continent, for adhering to the royal family of Spain. Colonel Flinter undertakes to "prove that white men equally as people of colour born within

* Communications concerning Cuba.

the tropics can work in the field as well as the natives of Africa." The white people of Great Britain living in the West India islands, although not exposed to the labours of the field, suffer so much from the climate, that I fear Colonel Flinter is wrong if he includes among "white men" the British. With regard to the Spaniards labouring in the field I have no fact to oppose to Colonel Flinter's statement, but should think he is in the wrong from what has been observed in other countries, and also from the failure of the experiment made by the Spanish Government, of transporting peasants, to the Southern States of America, for the purpose of tilling the ground, without the assistance of slaves.

Portuguese Colonies in Tropical America.

In the year 1500 the king of Portugal, fitted out a fleet and placed it under the Command of Pedro Alvarez Cabral. On sailing to the west, to his surprise he discovered a country which is now known by the name of Brazil; it was attached to the crown and colonized by the Portuguese.

Brazil embraces nearly all the eastern tracts of South America, and consequently includes both tropical and temperate countries; Humboldt has estimated the white population at 920,000, and according to a report made to the king of Portugal in 1819 the white population was 843,000. Mr. Mathewson * states that from a comparison of various authorities, the white population at the highest does not exceed 600,000. I am unable to obtain any information as to the increase or decrease of the white races or their distribution, whether along the coast or in the interior, and more elevated parts. When it is considered that Brazil has been colonized for more than three hundred years, and that the white population is so small in a country so extensive and productive of the food of man, it is naturally inferred that there must be some cause which retards the increase of the population. In the tropical parts of the country where the temperature is about 80,° I have little doubt of the climate proving unhealthy, and this being the chief cause of the slow growth of the white men. Mr. Caldcleugh † when alluding to the effects of the climate on Europeans, states, "The climate is too warm, the native vegetation too rapid, and food is raised with too much facility; indolence, sickness and death, are the consequences." The following unccessful modern attempt at colonization in Brazil confirms the opinion of the unsuitable nature of

* Narrative of a visit to South America in 1825.

† Travels in South America by Alexander Caldcleugh, Esq. London 1825.

the tropical parts of the country, for the flourishing of European settlers.

The king of Portugal in 1820 endeavoured to form a colony of Swiss in Brazil, as they were represented to him to be a race of men of more moral habits than other Europeans ; one thousand Swiss families were embarked from Hamburgh and Amsterdam for Rio de Janeiro, and on their arrival in the country they were marched to a district near Canto Gallo at the head of the Bay. The tropical climate soon began to have effect on the number of the emigrants and on their health ; the colony in consequence of discord and sickness (the former evidently caused by the latter) was broken up, and this attempt at Swiss colonization in Brazil, proved a complete failure.* The causes of the failure are no doubt differently accounted for, but it is stated by an author who writes on this subject, that "blame rests with both parties (Government and Colonist), and some portion with the climate."

Mr. Langsdroff, a Russian, possessed an estate on the borders of the tropics in the neighbourhood of Rio Janeiro, called Mandivea. He endeavoured to form a colony of Europeans, and brought over for this purpose about two hundred Germans ; his terms of agreement were loose and much too severe, so that all of the settlers excepting fifty left him.† From this colony no inference can be drawn ; it is merely inserted in this place, to show one of the many attempts made to induce Europeans to settle in the tropics, a measure which is productive of so much misery.

The Portuguese have made some small settlements in Guiana ; the climate has been found along the banks of the Rio Negro extremely unhealthy for Europeans. The Portuguese felons are banished to a small settlement in Guiana.

English Colonies in Tropical America.—For nearly one hundred and fifty years after the discovery of America, the West India Islands remained in the hands of the Spaniards, who afterwards abandoned most of them. Towards the latter end of the 17th Century, the English and French may be said to have divided the islands between them : since that period, island after island has fallen into the possession of the English, either by conquest or treaty; three of those settlements I will mention.

Barbadoes.—This place afforded an asylum to many of those who suffered persecution during the the iron age of the civil wars in England,

* Caldcleugh's Travels in South America.
† Captain Owen's Narrative.

and it was the earliest settled and improved of all the possessions of Great Britain.

In	1650 the white population was said to be		20,000
	1670	Ditto	Ditto 50,000
	1724	Ditto	Ditto 18,295
	1786	Ditto	Diito 16,177
	1809	Ditto	Ditto 13,794

The white inhabitants therefore in Barbadoes, were in 1809 little more than a fifth part what they were in 1670; about 1830 the white people were estimated at 14,000. The causes assigned for the destruction of the white population (although fresh emigrants were constantly arriving) are, hurricanes, the opening of the island of Jamaica to enterprise, and occasional severe sicknesses. The last I fear has been the chief cause, an opinion which is supported by the fact, that the British troops quartered in the island lose annually by death, one man out of every twenty two, a mortality which is three times greater than that which occurs among soldiers in a temperate climate *

Jamaica.—This beautiful and fertile island, has been gradually colonized since it was conquered in 1655. The progress of the white population has been extremely slow.

In	1768 the white population was estimated at		17,947
	1775	Ditto	Ditto 18,500
	1817	Ditto	Ditto 30,000
	1834	Ditto	Ditto 35,000

Here there is a decided increase, but so small as to prove the increase has been solely caused by fresh arrivals from Europe and not by births. This is rendered more obvious when it is considered that during twenty years, the white soldiers died in Jamaica at the fearful rate of 121 men out of every thousand, annually, an extent of suffering which defies increase by births.

On the conquest of Jamaica, Cromwell who had estimated the proper value of this island to Great Britain, formed a plan for its improvement and security. He proposed and urgently held out great advantages to the people of New England, to allow themselves to be transported to the is-

* Martin's Colonies, Edward's West India Islands, Halliday's West Indies, Reports on the health of the Troop, &c.

land of Jamaica, a proposal which the colonists of New England declined, fortunately, both for themselves and their descendants. *

Montserrat.— This island was conquered and colonized in 1632, and in 1648 the white population was 1360. In 1791 there were about 1300 white people, and in 1828 the European population and their descendants were reduced to 315.

The other settlements in the West India islands might be quoted as showing equally unsatisfactory results, but what has been adduced, sufficiently proves how unfavorable these islands are for the European constitution, and I shall not therefore extend this paper by examining into the other islands. The mortality which occurs among the British troops quartered in the West India islands, will carry to most the conviction, that no settlement of the English would be able to keep up, far less to increase their numbers, solely by birth.

The British nation have made few attempts to form settlements on the continental parts of Tropical America; the few which have been made may be said to have proved unsuccessful—I shall briefly mention them.

In 1695 a company was established in Edinburgh under the name of the Scotch Darien Company, for the purpose of commerce with South America. In 1698 the Company endeavoured to establish a colony on the isthmus of Darien, but it is stated that the first success of the settlement was not supported by the British Government, and in consequence the colonists were dispersed by the Spaniards about a year after their arrival in the country. A writer † when alluding to the failure of this colony, remarks, " and thus vanished the best project that ever was formed for disputing with that nation (Spain) the possession of those countries from which she pretends to exclude all other nations." This attempt would not in all human probability have succeeded, even if the British Government had given it their support, for it was on this part of the continent of America, where the Spaniards first endeavoured, under the directions of the intrepid Balboa, to plant colonies, and these settlements the Spaniards were obliged to abandon in consequence of the climate; for example, Pedrarias, one of the Spanish leaders, landed at Darien in July 1514 with 1200 men, and in the course of a month about 600 perished in the greatest misery from sickness.

Great Britain, by the treaty of 1814, was confirmed in the possession of the Dutch settlement of Berbice and Essequibo, places which extend about

* Robertson's America. † Rees' Cyclopaedia.

three hundred miles along the coast of America, and the whole district is now denominated British Guiana. In 1827 the white population was estimated at eight thousand; the climate is characterized by heat and moisture, and resembles that of the West India islands; settlers are liable to malignant fevers. The mortality among the British Troops quartered here, averaged annually 84 deaths out of every thousand, an amount of deaths which renders every attempt at colonization fruitless.

During the speculative year of 1825 in Great Britain, a company was formed denominated the Colombian Agricultural Association. This company sent out a colony of two hundred settlers to La Guayra, which is the sea-port town of the Caracas in Colombia. The climate of the country differs, as has been already stated according to the elevation. Of the two hundred emigrants landed at the sea-port of La Guayra, a considerable number died, and the remainder were conveyed to the United States. This endeavour to form a settlement in the low parts of Tropical America, ought never to have been attempted after the failure of the king of Portugal to establish a Swiss colony in Brazil, only a few years previously, and which is mentioned under the head of Brazil.

Several other European nations besides these quoted, possess settlements in the tropical parts of America. The French have got settlements in the West India islands and in Guiana. The Dutch have got the islands of Curaco and St Eustace, and Surinam in Guiana. The Danes are possessed of the islands of St. Cruz and St. Thomas, and the Swedes have the island of St. Bartholomew. The state of the white population in these tropical settlements ought to have been examined, but it has been already stated how unhealthy the different West India islands prove and also the settlement of Guiana; and to limit the extent of this sketch, I omit the examination of them, an omission of no great importance, seeing that the number of Europeans resident in each place is small, and subject to constant change.

General Remarks on the European Colonies in the Tropics.

In the preceding history of the different European colonies in the tropics, it will have been observed, the island of Puerto Rico is the only place where there is any thing like evidence to prove, that the natives of the temperate zone are keeping up their numbers by births, in a country where the mean temperature is about 80° Fah. It appears to me that little confidence can be placed on any conclusion drawn

from this island, for although in the year 1828, * the births exceeded the deaths, still this fact is only for one year, and the year quoted might have been a healthy one, for in the West India islands sickness is generally periodical. Let it be granted that the births among the European settlers exceeds the deaths, will the children born and reared in the island possess a vigorous constitution, and will they produce a healthy offspring? In India the proportion of births among married Europeans quartered in healthy stations always exceeds that of the deaths, but it has been previously stated, the children are with difficulty brought to maturity, and their offspring if they ever have any, are worse in those respects than the first generation. Again, Colonel Flinter the author quoted regarding Puerto Rico, writes with an anxious desire to make the island appear highly favorable for Europeans. This desire to think favorably of a climate under which a person may have lived for some time, is no unusual circumstance, even in a country highly injurious to life. Ask the European who has lived for many years in Jamaica or India, and who has personally not had much sickness, nor has seen his intimate friends afflicted, whether the country is a healthy one, and very possibly he will answer that it is an excellent climate, and that the deaths among the European Soldiers are to be attributed to other causes than the climate. For these reasons, I am inclined to think the Spanish setlers in Puerto Rico are not keeping up their original numbers by births; the increase of population as has been stated is attributable to the arrival of the expelled American Spaniards from the continent.

The elevated parts of South America, where the mean annual temperature is much below 80 Fah. (and where the fruits and flowers of a temperate climate are produced), is the only region within the tropics, where Europeans have lived and propagated their pure species for two hundred years: but are those settlers in South America keeping up their original numbers by births and increasing according to the laws of population? In answer to this question, I must state, that neither accurate nor even probable statements can be quoted, as to the number of Spaniards and Portuguese who originally migrated to South America. By some writers it is mentioned that such was the mania for migration, that Spain was almost depopulated; by others, that during the whole space of three hundred years not more than five hundred thousand Spaniards landed as emigrants in South America. Benzoni in his history of the New World, states that in 1550, fifty-eight years after the discovery of America,

* See account of the island previously given.

the number of the Spaniards in all the provinces of the new land, did not exceed fifteen thousand, but Robertson affirms that Benzoni wrote in the spirit of a malcontent, and consequently was inclined to detract from the Spaniards in every particular, so we are completely ignorant whether the European settlers in South America have increased or diminished. There can be little doubt some cause has retarded the increase of the settlers, when we consider how slow their numbers have increased during the last eighty years, compared with other countries, and the retarding cause appears to have been the climate. The country is gifted with an abundance of the necessaries of life, and in Mexico, such is the fertility of the soil, that wheat yields a return never under seventy and sometimes as much as a hundred fold,* while in great Britain the average is only nine to one.

Although we are unable therefore to judge of the effect of climate on the increase of the Spanish settlers in tropical America, still its effect is well marked on their characters, for they are described by many travellers to have degenerated much from the race out of which they have sprung. Indolent in their habits, and without energy in their minds, they have managed to exist, but that existence has been a kind of animal one, for they have contributed little or nothing to the general stock of human knowledge; easily amused and like children easily excited, they have generally acted on the impulse of their feelings at the moment, and in the present day they find ample employment in their mutual quarrels, which will continue until a more enlightened feeling springs up among the majority of the people, or until a powerful hand grasps the reins of Government. The historian Alison, when alluding to the extent of Mexico, and with astonishment at the fertility of the soil, concludes, "But notwithstanding all these advantages, it is more than doubtful whether the Spanish race is destined to perpetuate its descendants, or at least retain the sovereignty of the Country."

The opinion quoted in the above paragraph is in part confirmed by the rapid advancement which North America is making. Already the people of the United States think that the first step to the colonization of South America has been begun by the colony which has been formed in the Texas, and it has been surmised, that before many years have elapsed, Mexico will be peopled by the Anglo-Saxon race; and it has been anticipated by those, who look for retribution of evil done in this world, that the present Spanish descendants in Mexico, may partly become extinct.

* Humboldt.

or at least lose the sovereignty of the country, and the Spanish race will thus, in a mitigated degree, experience, some of those miseries, which their ancestors the first settlers inflicted, in extirpating with unmitigated cruelty the inoffensive aboriginal inhabitants of the West India islands.

The Texas, abovementioned, is a tract of country stretching north and south along the gulf of Mexico; it cannot be considered however as a tropical settlement, because the Rio de Norte has been adopted as a boundary, yet it is such a near approximation to a tropical colony, that I cannot omit here alluding to it. Mr. Bollaert, read lately before the Geographical Society of London, a report on the present state of the Texas, in which he states the white population amount to sixty thousand, and the average temperature during several months of the year is 80° Fahr. The success which has hitherto attended the increase of the Anglo Saxon race in the temperate parts of America will, I fear, decrease when they attempt to propagate their species in the tropical regions. They may easily conquer and even people the country, like the Spaniards, but two hundred years will not elapse before the enervating effect of the heat will render the Anglo-Saxon race as degenerate in mind and body, as the present Spanish races are in South America. Let those who intend to emigrate look to the southern countries of the United States, where the Europeans are even now said to have shortened their lives; for example Dr. Brown in the article malaria of the Cyclopedia of Practical Medicine, mentions, that in Georgia and Virginia the extreme term of life is about forty years, and he affirms on the authority of Dr. Jackson, that at Petersburgh in the United States, a native and permanent inhabitant rarely reaches the age of thirty eight years. For these statements there must be some grounds, although I have no doubt they are much exaggerated.

It is necessary here to recollect that every tropical region, where Europeans have either colonized or have settled, the severe duties of tilling the ground and procuring food have been chiefly performed by the Aborigines. In no country, having a climate approaching to that of the torrid zone, have Europeans been able to expose themselves to the vicissitudes of the climate, and hard labour, without injuring their constitutions. The Spainards in South America found the truth of this, for after having emancipated the aborigines of the country from forced labour, they could not cultivate the soil themselves, and they were obliged to commence the practice of slavery, and for this purpose to purchase Africans from Africa. The Spanish Government by way of experiment on this question caused a

number of peasants from the Azores to be transported into a district of Louisiana in the southern part of the United States: these settlers still cultivate the soil without the assistance of slaves, but their industry is so languid as scarcely to supply their most necessary wants, * and if this apathy occurs in a temperature not altogether tropical, it is not likely to be improved by working in a purely tropical country. Mr. Bollaert in his report on the Texas, gives it as his opinion, that the white settlers must look for the proper cultivation of the soil to the negro race, the heat of the climate unfitting white men for this labour.

Let me now conclude this part of the sketch by stating, there is little doubt, the tropical parts of the world are not suited by nature for the settlement of the natives of the temperate zone. European life in those parts is with difficulty prolonged, much sickness is suffered and their offspring become degenerate and cease to propagate their species in a few generations; and should necessity force Europeans to perform the drudgery of life by labouring in the field, their lives will be rendered still shorter, and their existence will be little better than a prolonged sickness; like the plants of the torrid zone forced to grow with artificial heat in a temperate country, they bear ill any exposure to the climate, and like them they degenerate very much.

Could the Natives of a Tropical Country Colonize in a Temperate Climate.

This is the reverse of the preceding migration but of which kind of migration there are few examples on record. The facts which it has been in my power to collect, from the history of the human race, limited as these examples are, sufficiently shows that the natives of the tropics resemble the inhabitants of the temperate zone, in being peculiarly adapted to the climate of their race, and that the indigenous tropical people are not at all likely to be able to keep up their original numbers by births in a temperate climate.

On the African race living in the temperate parts of America.

With the discovery of America commenced the system of transporting the Africans as labourers to the new continent. A few zealous protectors of the American Indians having relieved them of part of the slavery to which their conquerors had reduced them, found (as has been

* Tocqueville's Democracy in America.

already stated) after they had done so, that the soil could not be properly cultivated and improved, without the labour of the natives. In this difficulty Las Casas gave origin to the scheme of purchasing Negroes from the Portuguese settlements along the coast of Africa. So early as 1503 a few Negro slaves had been sent to the New World, but in 1511 Ferdinand permitted the transportation of them in large numbers, and in 1517 Charles the fifth granted a patent to a company to transport four thousand Negroes into America, and this may be said to have been the commencement of the traffic which has been carried on ever since. About the year 1616, the first importation of Negroes into the English settlements of North America was made by a Dutch ship, and the Africans both in the tropical and temperate parts of America have been increasing up to the present date. It is only here necessary to consider the increase of this race in the temperate regions.

In 1790 the slave population in the United States was 694,280
1820 Do. Do. 1,538,118*

and Darby in his view of the United States informs us that the slave-population in 1830 amounted to almost two millions.

From the great extent of the United States, the climate of the western and southern countries differs from that of the northern. In the Southern States the heat is almost tropical, although placed in temperate latitudes, and it is in this part of the country where most of the Negro population are resident, very few living in the northern parts where the climate is cold. In the Southern States the Negro race is said to increase faster than the Europeans, but in the Northern, the Africans are said to be slow in their increase; emigration however presents difficulties which prevents our accurately ascertaining the relative increase of both races in America. In 1810 the population of the state of New York was 959,049 white persons, and 40,350 blacks; in 1825 the white population was 1,616,458 and 39,979 were blacks, and during all this time New York was resorted to by the free Negroes for employment. In Massachusetts slavery has ceased to exist since the declaration of the Independence of America, and this State has consequently been a favourite residence of the blacks, and yet they have slowly increased during the last thirty years, notwithstanding the emigration of the Negroes to Massachusetts for the sake of the protection she extends to them.†

* Malte Brun.

† Notions of the Americans by Halliburton.

In the Southern States the black race increases, and in some of the northern districts they keep up their numbers although they do not increase much. This increase takes place I am inclined to think solely from the arrival of fresh Negroes from the tropical countries, for I cannot find any well authenticated fact to show that the Africans are increasing entirely by births in a district where the average temperature is 60 Fahr. In support of this statement, and of the opinion, that the Negro race diminishes in temperate regions, I have to adduce the two following facts drawn from the number of deaths.

In Philadelphia from 1820 to 1831, only one death occurred annually on an average out of every 42 of the white population, while during the same period, one Negro died annually out of every 21 living, a mortality double that of the whites and a proportion of deaths which must prevent any great increase by births.*

In New York among the white population during the year 1837, one man died out of every 34 living, whereas among the black population, one death occurred during the same year out of every 22 living, † a simple fact which shows how deleterious the climate proves to the African constitution.

An inference may be drawn also that the climate is unfavorable to the Negro race from the disease which proves so fatal to them in New York, viz. consumption.

In 1827 at New York out of 718 deaths, 100 died from consumption.

‡ 1837 Do. 702 deaths, 165 § died from consumption. Consumption is not a disease among the Africans resident in the districts where nature has given them birth. Dr. Winterbottom, who was Surgeon to the colony of Sierra Leone for many years, in his account of the native Africans, mentions, when speaking of consumption that "as an idiopathic disease I do not recollect to have seen a single case." Mr. Park in his account of the interior parts of Africa, states, that the diseases of the Negroes appear to be few in number, that fevers, and fluxes, are most common and fatal. Mr. Oldfield mentions ‖ that the coast

* Emerson's Medical Statistics, p. 28.

† American Journal of Medical Science.

‡ Hawkins Medical Statistics.

§ American Journal of Medical Science.

‖ Memoirs by Mr. Oldfield, Surgeon to the late expedition to explore the African Coast.

of Africa near the river Nuun is very unhealthy, and that the natives are subject to diarrhœa, dysentery, and a variety of cutaneous diseases. No mention is made of consumption, a disease which would have been noticed if it had produced one-fourth of the whole deaths as at New York.

The want of sufficiently ample materials, to illustrate the insalubrity of the temperate parts of the United States, to the Negro race, has made me draw arguments from the prevalence of consumption. It is necessary for me here to state that the African race in the West India, Ceylon, and other tropical islands, suffer also to a severe extent from consumption, so that the prevalence of pulmonary disease among the Africans in America, cannot be attributed to the coldness of the atmosphere.

During the American war, a body of Africans, took part, and assisted the British Government in defending the Colony. Shortly after the termination of the war, twelve hundred Negroes who had been thus employed, petitioned the British Government to remove them from Nova Scotia on account of the coldness of the climate; a petition which was granted and they were transported to Sierra Leone. This simple fact, although it affords no proof that the climate was detrimental to their constitutions, is sufficient to show how severe must have been their sufferings from the cold, and it may generally be laid down as a rule in nature, that when a climate produces oppression either by heat or cold, on the feelings, it almost invariably becomes injurious to the health.

During the year 1810, a body of African troops (4th West India Regiment) were quartered in the fortress of Gibralter, but the climate produced so many deaths from consumption, that it was found necessary to withdraw them and remove them to the tropics: the medical history of the above given by the medical officer is very limited.

The Sierra Leone Company, anxious to introduce the benefit of education into the colony, transported a number of African children for education to England. They suffered severely from the cold climate, seldom surviving the third year. During the first year, says Dr. Pearson, they were tolerably well, fell off during the second, and the third year generally proved fatal.

These are all the instances I can find of the migration of the Africans in a body to a cold country; I shall now examine the removal of the tropical inhabitants of America, and the following is the only example of this race being removed in a body which I can find.

Removal of the Aboriginal Inhabitants of Tropical America.

In the St. Augustine war, which took place in the year 1702, a body of Spanish Indians were captured in the tropical parts of South America, and sold as slaves in New England, but they soon suffered much from the coldness of the climate and most of them died of consumption. *

Removal of the Natives of Tropical Asia.

Ever since the communication of Asia with Europe by the Cape of Good Hope, instances of solitary migration have been constantly occurring. In most of these individual instances the cold climate often proved injurious to the health, and frequently destructive to life. There is, however, no instance on record, which I am aware of, where a large body of the natives of tropical Asia, have migrated to a cold climate for permanent settlement. The genius and daring spirit of the British rulers of India has furnished us, with two modern remarkable examples of a temporary removal of the natives of Hindoostan, to a temperate country, and in both these instances, although the period for observation, was short and the injurious effect of a cold climate had not sufficient time to act so as to produce its worst effects; still the examples are such, that in the absence of others of more value it is better to record them.

During Napoleon's invasion of Egypt, an Anglo-Indian army of nearly seven thousand men embarked from India, and landed at Cosseir bay, in 1801. The army was composed of 3,042 sepoys, inhabitants of the tropical parts of India, and they were stationed in Egypt about sixteen months, during which time 326 sepoys died. This is a mortality of about 10 per-cent per annum. Many of the sepoy Regiments were less than sixteen months in Egypt, consequent on the difficulty of providing transports, for them both to and from Egypt; this circumstance I mention, as an average rate of mortality has been drawn for the sake of comparison.

When it is recollected that the sepoy dies in India at the rate of about one and half per cent per annum, and that by a transference from a climate of 80° to that of a country where the climate ranges from 49° to 70° degrees, the mortality rose to nearly 10 per-cent per annum, an inference must be drawn, that the natives of India will never be able to colonize in a temperate country. Plague and fever were the most fatal diseases among the sepoys in Egypt. It has been stated by authors

* Gordon's Polit. Summary, Vol. I. page. 174

that Egypt was colonized from India, a question not now likely to be determined, but the fact quoted, imperfect as it is, would lead us to support the latter opinion.

The late unfortunate expedition into Affghanistan, has afforded another example, of the injurious effect of climate on the natives of India. It was observed that many of the sepoy Regiments which were only temporally stationed in Affghanistan, did not apparently suffer much from the climate; the length of time to which they were exposed to the cold, was scarcely sufficient to produce injurious effects; other Regiments which had been stationed in the country for a greater length of time seemed to suffer, but the deleterious influence of the cold climate may not have been rightly felt, until the return of the sepoy to the comfort of quarters in India. Lady Sale in her Journal of the disasters in Affghanistan states:—"The sipahies complain bitterly of the severity of the weather (Cabool) particularly at night, and above sixty men are in hospital at the Bala Hissar already, besides the wounded, they are attacked with pneumonia which carries them off in the course of a couple of days." This is a disease to which the sepoys in India are not peculiarly liable.

Concluding Remarks. Superficial as the foregoing sketch is, and limited as to the number of facts adduced, I cannot refrain from drawing the conclusion, although not clearly proved, viz. that man both from his mental and physical structure, is able to resist sudden vicissitudes of climate better, and for a greater length of time than any of the inferior animals, yet he is only born to flourish in climates, analogous to that under which his race exists, and that any great change is injurious to the increase and to the mental and physical development of man.

The nearer the climate of the original resembles the adopted country, so much less will be the injurious effect. Thus the inhabitants of Spain suffer less from the climate of the West India islands, than the natives of Great Britain, and Mr. Boyle in his Medico-historical account of the West Coast of Africa, states, that the Dutch and Swedes appear to suffer more from the climate, than the people of more southern countries.

There is a theory in medicine denominated the doctrine of *acclimatization or seasoning*, the principles of which are, that the human constitution after a certain length of time, becomes suited to any great change of food, climate or indeed any unusual mode of life. On this theory is founded the opinion that the first few years of a European's residence in the tropics are more fatal than any other period, an opinion opposed to many statistical facts, and at variance with the statements adduced in

this paper; for it must be obvious if the doctrine of seasoning were correct, the European ought to be completely fitted in the course of sixty years to resist every injurious effect of the tropics, and that their offspring should almost resemble the aboriginal races in being able to bear the heat, a result perfectly opposed to almost every fact which has been quoted.

With the exception of a few barren islands, the whole surface of the globe, at present known, is peopled by the human race. This diffusion of man from the poles to the equator must have been extremely gradual, an opinion which the examination of the sacred and profane history of the world proves. It will be found on the examination of all the ancient colonies, whether entered on for conquest, trade, dissatisfaction at home, or want of food, that the emigrants never adopted countries to settle in, possessing climates and seasons, diametrically opposed, or differing to a great extent from their father-land. No great vicissitude of climate, or sudden change of food, or mode of living, was therefore experienced, and the human race increased and multiplied on the earth. It is not necessary to go back to the early days of the world, to show an example, of the energy which exists in man to increase, if emigrants settle in climates and countries suited to their constitutions and habits. Scarcely more than two hundred years have elapsed, since the unfortunate reign of Charles the First of England caused a few British exiles to settle on the shores of the temperate parts of America; from that time they have gone on increasing by births, and emigration, to an extent which astonishes every one, who reflects on the subject; every twenty-three years and a half, the population has doubled itself, and at the census of 1840 the different divisions of the United States, contained seventeen millions of souls; contrast this increase with the languid state of any European colony, or settlement, in the torrid zone, and we at once have an example of the beneficial and injurious effect of climate on the human race.

Article. V.

Remarks on the Treatment and Pathology of Delirium Tremens, as observed in the European General Hospital at Bombay, during the five years, from July 1838, *to July* 1843. By C. Morehead, M. D.

Presented November, 1843.

During the five years over which these remarks extend, 237 patients have been under treatment for delirium tremens, being 3.1 per cent of the total hospital admissions; of these, forty one cases have terminated fatally, being 17.8 per cent of the admissions from delirium tremens, and 7.5 per cent of the aggregate deaths in the hospital.

Though 17.8 per cent is the average annual rate of mortality for the five years, it has varied considerably in different years, and very strikingly in different months. In the years 1839 and 1841, the deaths were above 20 per cent of the admissions, whereas in the year 1842, they were only 7. per cent. Throughout the five years, there is not a single fatal case of delirium tremens recorded in the months of January and February, though the admissions from the disease were respectively 3.2 and 5.3 per cent of the total hospital admissions; whereas in the months of May and October the rate of mortality from delirium tremens was above 40 per cent, though the admissions were not above 4.7 and 1.2 per cent of the aggregate hospital admissions. In the month of May also the admissions are numerically considerably above those of any other month of the year.

The data from which these statements are made, will be found with additional statistical details of a similar character in the tabular return which is annexed to this report.*

* Also in the appendix, a statement of the total admissions into the hospital for the same period.

The persons who are admitted into the General Hospital, affected with delirium tremens, generally belong to one of the following classes. 1st. Engineers and Boiler-makers connected with the Steam Flotilla Department, or the works in the Dockyard—men not long resident in India, and whose ages may range from 20 to 35. 2nd. Non-commissioned Officers and Soldiers attached to the different branches of the Military Department at the Presidency—men of various periods of service in India. 3rd. Seamen belonging to the public service or to merchant ships, who have been on shore on liberty, and have for a succession of days been dissipating in the bazaar; or seamen and others out of employ who have been lodging in taverns.

From the class of seamen however, the admissions are considerably the most numerous.

The division of delirium tremens into two species, which has been made by some* writers would seem to be correct. The 1st species, generally immediately succeeds the excitement of hard drinking without an intermediate period of abstinence from the accustomed stimulus, and is characterized by a flushed countenance, full pulse, slight tremors, a tongue coated in the centre and frequently florid at the tip, with, generally but not invariably, more or less irritability of stomach. In the 2nd species, the symptoms come on in the habitually dissipated, after the accustomed stimulus has, from some cause or other, been for a time withheld.

Of the *first species*, cases are occasionally admitted into the General Hospital, occurring, generally I think, in the class of steam Engineers, and not unfrequently terminating by convulsions unexpectedly coming on, and passing into complete coma, with rapid pulse, pungent heat of skin, and proving fatal in a few hours after the accession of the convulsions. The occurrence of symptoms of gastric irritation in cases of this form of the disease, is certainly frequent, and probably sufficiently so to justify the opinion entertained by† Dr. Stokes, that it is dependent on Gastritis. At all events, this complication requires to be specially attended to in the course of treatment.

Many of the cases do well under the use of the cold affusion frequently repeated; attention to rest and quietness; the exhibition of effervescing draughts with a few minims of tincture of opium; and the application

* Copland's Dictionary of Practical Medicine and British and Foreign Medical Review, Vol. ix. p. 475.

† British and Foreign Medical Review, Vol. ix. p. 476.

of sinapisms to the epigastrium, or a blister, if the symptoms are more urgent. A dose of calomel, vi. or vii. grains, with one grain of muriate of morphia and one of ipecacuanha, given at bed time, preceded by cold affusion to the head and hot foot bath, is frequently useful.

It is, I think, only in this species of the disease that the question of the expediency of the local detraction of blood, can, with advantage, be entertained; and probably the best guides to its successful adoption are the habit of the individual,—whether plethoric or not—the knowledge possessed of the length of time to which he has been addicted to habits of dissipation, and the stage of the attack. In young men of robust constitution, not long resident in India, and not confirmed drunkards,—it is often useful, at the commencement of the attack, to detract blood locally by cupping the nape of the neck, or leeching the temples; but, it has seemed to me, that it is only under these circumstances that the practice holds out any prospect of benefit. In regard to the general abstraction of blood, I believe, that even in these cases it is very seldom expedient, and, if adopted, should be carried into effect with very great caution.

Stimulants (wine, &c.) in this form of delirium tremens are not generally required,—but the state of the pulse and skin sometimes calls for their exhibition. When symptoms of gastric irritation are not present, (and such cases I think occasionally present themselves,) the use of tartar emetic combined with more or less opium, according to the character of the head symptoms, in the manner to be subsequently more particularly adverted to, is perfectly applicable.

But the *2nd species* of the disease is the one of greatest importance, and most frequent occurrence; the other being comparatively rare.

The division of the *2nd species* into three stages, first, I believe, suggested by * Dr. Blake, is quite in accordance with the character of the disease as observed in the General Hospital, viz. 1st, A stage of depression, characterized by tremors (in some cases excessive); by feeble pulse; sleepless nights, but no delirium; anorexia, and frequently irritability of stomach. 2nd. The stage of active delirium. The 3rd. stage, in cases which have gone on favourably, is one of lengthened sleep, followed by recovery; in cases which have progressed unfavourably, it is a state of low muttering delirium, with contracted pupils, tremulous agita-

* Edinburgh Medical and Surgical Journal for October 1823. I regret that I have not had the opportunity of consulting Dr. Blake's Practical Treatise on Delirium Tremens, published in 1830; or the 2nd Edition of 1840.

tion, feeble and rapid pulse, and generally terminating fatally by convulsions and coma, or by coma coming on without convulsions. It is to this train of symptoms, that throughout these notes, I shall apply the designation "*3rd stage.*"

1st stage. By treating this stage with stimulants, wine, brandy, &c. and * occasionally an opiate at bed time, preceded by cold affusion to the head,—the occurrence of the 2nd stage is sometimes prevented, and recovery takes place; or, if it is not prevented, is much lessened in severity.

In the cases in which there is irritability of stomach with slimy and florid tongue; effervescing draughts with a few minims of laudanum, sinapisms or a blister to the epigastrium, with stimulants according to the state of the skin and pulse and tremors, and a grain of muriate of morphia, with two or three grains of calomel, at bed time, with an effervescing draught, and preceded by a hot foot bath,—constitute the best mode of treatment. In the management of this stage the use of stimulants ought never to be abruptly stopped, but gradually lessened, and an adequate diet should be reverted to as soon as practicable.

The 2nd stage, or that of active mental excitement. It is unnecessary that I should enter into any particular description of the symptoms of this stage; they are those which most particularly characterize the disease, and they will be found accurately detailed in all the best late works on practical medicine. There are, however, certain particulars which, though noted by some observers, have not, I think, received that attention which their importance (as bearing on treatment) seems to me to require; and on these points I shall somewhat extend my remarks.

It is observed by Dr. HoegGuldberg, Physician to the Hospital at Frederickstadt, that the critical sleep occurs in the greater number of cases on the fourth day; but it does not appear whether he dates from the commencement of the first stage, or from that of the second. In all probability from the former; for, on carefully going over a great many of the diaries of cases treated in the European General Hospital, I find, that of 26 cases in which the access of the second stage and its termination, are

* I have said occasionally an opiate at bed time advisedly, because it requires to be given with discrimination; for not unfrequently the first symptoms of the 2nd stage come on after an opiate given at bed time; whether in consequence of the opiate, or because it has chanced to have been given at the period when the commencement of the 2nd stage was to be looked for in the regular course of the disease, is a question which I do not pretend to resolve. Of the fact as now stated I have no doubt.

distinctly recorded,—the average duration of this stage is 46 hours,—the shortest period being 24, and the longest 60 hours.

It is distinctly stated by Dr. Blake, that the mental irritation requires a given time to subside; and it is also the opinion of Dr. Ware of Boston, that the disease runs a certain course. From considering the cases which have passed under my own observation, I had arrived at a similar conclusion, and at a time when I was not aware that the same opinion had been entertained by previous observers.

The circumstances which guided me to this opinion, were, 1st, the frequently observed fact, that the quantity of opium which on one day failed in inducing sleep, succeeded on the following; a circumstance to be explained, either on the supposition, that the natural tendency of the symptoms was to abate, after a certain course; or that the effect of the opium was cumulative,—a conclusion which would be contrary to our experience of the action of that medicine in all other diseases. 2nd, Again, in cases treated with full opiates frequently repeated, I have several times remarked, that sleep was induced for three or four hours, but that the patient then woke up delirious as before; and some of these cases I have known to terminate fatally.

It is this feature,—I mean the circumstance of the 2nd stage running a certain course,—which it seems to me has not received its full consideration, in relation to treatment; for, if acknowledged, it may be safely affirmed, that the indication of cure is not by full doses of narcotics to force a state of sleep, but to conduct the patient through the period of delirium, by withdrawing all sources of irritation, by moderating or sustaining the circulation, and by calming the nervous excitement. Though a similar opinion is expressed by Dr. Blake in the following words; "It does not appear to me to be of any service to attempt to break the chain of morbid concatenation too abruptly, as the stage of mental irritation seems to require a given time to subside, in proportion to the stage of exhaustion, to the mode of treatment adopted, and to its previous causes." I am not aware that any subsequent writer has given to this feature of the disease that prominence, which its importance demands.

* The indications of cure, as thus stated, are, I think, best effected

* Though, as I have elsewhere remarked in this paper, figured statements as data from which alone to judge of the success of medical treatment, are open to very evident sources of fallacy,—still the fact should be recorded here that the year 1842, in which the rate of mortality from delirium tremens stood as low as 7 per cent, is that in which the mode of treatment about to be detailed, was followed most systematically and steadily.

by means of the cold affusion, and the use of tartar emetic combined with opium or other narcotic, and the exhibition of stimulants.

In regard to the *cold affusion* it may be used with excellent effect three or four times in the course of the 24 hours, — the most important, however, being that before bed time,—in all cases in which the circulation is steady, the skin not covered with perspiration, or its temperature not reduced below the natural standard ; or, in which there are not present, any of the local complications which contra-indicate the use of this remedy under ordinary circumstances. In cases in which, from the state of the pulse, there may be doubt of the propriety of the cold affusion, it frequently becomes quite admissible by preceding its use, by the exhibition of a stimulant (as brandy, &c.) ; and in the still more doubtful cases, and even in instances in which the measure may be decidedly contra-indicated, there is good effect from using cold affusion to the head, and at the same time a hot foot bath.

There is not, according to my experience, much difficulty in inducing patients to submit to this remedy ; and it is hardly necessary to add that the employment of coercive measures, to effect it, is altogether inadmissible. In considering this statement, however, it must be borne in mind, that I write of experience in a climate whose mean temperature is about 80,° and that the water used has never been artificially cooled ; and that the practice of frequent bathing is habitual to many of the patients. The first consideration is important, as bearing on the question of the temperature of the water used ; and the second, as in all probability, explaining the little difficulty which has been experienced in inducing patients to submit.

But the exhibition of *tartar emetic with opium or other narcotic*, first, I believe, introduced into practice by * Dr. Law of Dublin, and followed by † Dr. Graves, ‡ Dr. Clendinning, and others, constitutes the most successful means of controlling the symptoms of this stage of the disease. This mode of treatment has, during the last five years, been much followed in the cure of delirium tremens, in the European General Hospital at Bombay ; and there has been also, during the same period, ample opportunity of comparing the result, with that of the mode of treatment by free opiates frequently repeated.

* London Medical Gazette, for 2nd July and 30th July, 1835.

† The Dublin Journal of Medical Science for May 1836.

‡ London Medical Gazette, January 14th 1842.

Tartar emetic and opium, in proportions modified according to the symptoms, and associated with the use of the cold affusion and stimulants, is, in my judgment, a much more successful and satisfactory mode of treating the 2nd stage of delirium tremens, than the more common plan of giving free opiates uncombined, or in combination with stimulants alone, and is moreover devoid of the risk of positive injury which more or less attends the latter system of treatment.

The tartar emetic has been given by me in doses from half a grain to a grain in an ounce and a half of camphor mixture, with from 20 to 30 minims of tincture of opium or tincture of hyosciamus, repeated every hour, second, or third hour. The variations in the dose, and the intervals at which given, being dependent on the state of the circulation, the condition of the skin, and the degree of mental excitement. Though in determining these variations, there is room for the exercise of discretion, in each particular case, still, it will probably be found, that the greater number of cases are sufficiently controlled by $\frac{3}{4}$ of a grain of tartar emetic and 30 minims of tincture of opium or tincture of hyosciamus every second hour, continued till sleep is induced,—with intermissions of several hours, at times, if the sinking of the pulse or reduction of the temperature of the skin, should indicate the expediency of such a measure. The tincture of opium is, I think, the more useful; the tincture of hyosciamus having been used in the milder cases, and chiefly with the view of avoiding the constipating effect of the former. The tartar emetic, even in grain doses, thus combined and repeated every hour, very seldom causes nausea or vomiting; in fact, it has seemed to me that in the 2nd stage of delirium tremens, there is as complete a tolerance of the emetic action of the tartar emetic as is present in pneumonia; and this I have remarked, even in cases in which there had been irritability of stomach during the 1st stage,—an observation which also accords with Dr. Law's experience.

In cases treated in this manner for about 24 hours without tendency to sleep appearing, it is often very useful to intermit this medicine for a few hours before bed time; then to use the cold affusion, preceded, if the pulse and skin indicate the expediency, by a stimulant, and after the affusion, to give one dose of the antimonial with a drachm or a drachm and a half of the tincture of opium. By this means, sleep is often induced in cases in which, without this fuller opiate, it might have been postponed for several hours. It is however, I think, very generally of no avail to adopt this course within the first 24 hours of the 2nd stage.

Stimulants, as wine, brandy, &c. are more or less required throughout

the treatment of this stage of the disease; and their use is perfectly compatible with that of the cold affusion and the exhibition of the tartar emetic and opium. The degree to which these stimulants are required in individual cases, must vary according to what may be known of the previous history of the patient; the state of the pulse and skin at different periods, and this latter symptom ought to be the principal guide. From 6 to 8 ounces of Port wine in the 24 hours, will generally be sufficient, though the necessity of adding brandy to the extent of from 4 to 6 ounces, not unfrequently occurs; and it follows, that the cases in which there is the greatest necessity for stimulants, are those in which the utility of the tartar emetic is least apparent, and in which it is most frequently necessary to intermit its use. But cases of this nature constitute a small proportion of the number of admissions, and occur generally in those whose career of dissipation has been lengthened, and who have suffered from several former attacks of the disease.

It has been well remarked by Dr. *Budd, that in the management of this stage of delirium tremens, it is of consequence to attend to the diet of the patient with the view of encouraging any desire for solid animal food, that he may evince. This suggestion is, I believe, a very important one; and it has seemed to me, that very frequently, there is during this stage no great disinclination for food on the part of the patient, —such being rather a feature of the first stage.

The not unfrequent injurious effects of opium, too often repeated, or given in doses too large, in the treatment of the 2nd stage of delirium tremens did not escape the observation of Dr. Pearson † and Dr. Blake; and has been brought forward of late years very prominently by ‡ Dr. Wright of Baltimore and ‡ Dr. Ware of Boston. On no point of practice is my conviction more decided, than that opium in full doses requires to be exhibited in delirium tremens with very considerable caution,—much more, indeed, than is generally believed; and that it is liable, under some circumstances, to hasten on a fatal result by convulsions and coma, or to aggravate and modify the train of symptoms which characterize the 3rd stage.—The following have seemed to me the leading objections which may be urged against the treatment by opium, as frequently followed.

1st If there be good grounds for supposing that the tendency of the

* London Medical Gazette, May 13th 1843.

† Copland's Dictionary of Practical Medicine.

‡ British and Foreign Medical Review, Vol. vii. p. 268.

2nd stage of the disease, is to run a certain course and terminate in sleep, then the indication of cure is, surely, not to attempt to cut short this stage abruptly, by large doses of narcotics ; for it would be as sound practice to attempt to obviate the hot stage of an intermittent fever, or the febrile or eruptive stages of the exanthemata. (2nd). In support of the opinion that the treatment of the 2nd stage, by free opiates, may tend to interfere with its regular course, I would state that in selecting from the cases treated in the General Hospital those which illustrated the duration of * this stage, I confined myself to those in which the change from the 1st to the 2nd stage was well marked, and in which the occurrence of sleep was critical and followed by recovery ; and almost without exception, these cases have proved to be instances in which the treatment with tartar emetic and opium, and hyosciamus, cold affusion and stimulants had been used. In the cases in which the treatment by free and frequently repeated opiates had been followed, and which had also had a successful issue, I experienced a difficulty in marking distinctly the commencement and termination of the 2nd stage; because opium had very generally been given more or less freely during the 1st stage, and had plainly masked the period of transition; and again, very frequently during the course of the 2nd stage sleep was produced for some hours, but was succeeded by a recurrence of delirium, again to be checked and perhaps again to recur. It is not disputed that a full opiate given in the stage of excitement is frequently followed by sleep, but if the law as stated, be just, the probability of this issue depends on the period of the stage at which the remedy may chance to have been given ; and then it merely acts favourably in conformity with the natural tendency of the disease, and, not because there has been an accurate adaptation of the quantity given to the degree of excitement. (3rd). It has seemed to me, that in the cases treated with free opiates there is a greater tendency to pass into the 3rd stage, and I think, a greater number of cases thus treated terminate by convulsions and coma. I have not attempted by a scrutiny of the cases to offer a numerical statement in support of this opinion ; for, in all questions of medical treatment, such data are open to evident sources of fallacy,—the principal of which, perhaps is, that there are many important circumstances bearing on success which have no expression by numbers ; still, however, the opinion as stated is the result of the impression left on my mind by the cases which came under observation, strengthened by a careful review of a great many of the diaries.

* The result of which is stated page. 142.

(4th). As has already been remarked, it was the opinion of Dr. Pearson, that after a certain time it is injurious to persist in the use of opium, for the action of the medicine confuses the symptoms of the disease; and a similar conviction is more strongly expressed by Dr. Wright of Baltimore. My suspicions on this point were excited when it was not present to my mind, that such views had been already strongly expressed, and they were caused by the following circumstances. A man under treatment for delirium tremens in the 2nd stage, took gr. i. of tartar emetic and tincture of hyosciamus ʒi. every hour for ten successive times, after which there succeeded convulsive agitation of the hands which were moved about as if in search of objects; there was a rolling motion of the tongue about the teeth and cheeks as if in search of some object in the mouth; the pulse was 108 of moderate strength; there was constant incoherent low muttering, the pupils were *very much dilated*. Under the use of blisters, tartar emetic in smaller doses, with spiritus ætheris nitrici, this patient recovered. The symptoms just detailed are those of the commencement of the 3rd stage of the disease, with the exception that the pupils were much *dilated* instead of being *contracted;* and it is hardly necessary to remark that henbane in poisonous doses *dilates* the pupils, and opium *contracts* them.

The mode of exhibiting opium to which these remarks are intended to apply is, not the unusually large doses which would seem to have been recommended by some American Practitioners, but (1st) the use of tincture of opium in doses of ʒi. or ʒiss. with stimulants, given every hour or every two hours for many successive doses. (2nd). The exhibition of from a ʒiss to ʒiii of tincture of opium at bed time, followed by a half dose every hour or second hour for two, three or more times. 3rd gr. iss. doses of muriate of morphia with a few grains of blue pill at bed time, repeated every second hour in grain doses for two, three or more times, if required. The first mode, I have witnessed, the 2nd and 3rd I have frequently practised, using at the same time the cold affusion.

Before proceeding to consider the symptoms characteristic of the *3rd stage* of the disease, there are signs which mark as it were the approaching transition, in unfavourable cases, of the 2nd into the 3rd stage; and which as bearing on practice, it has seemed to me of much consequence carefully to note. After the 2nd stage has gone on for some time and sleep has not been induced, the pulse begins to increase in frequency, rising above 100 and becoming more compressible; the skin is damp; the expression of countenance becomes vacant, and the pupils

begin to be contracted; the tremors increase and assume more the character of subsultus tendinum than in the earlier period of the disease, and the patient catches at objects, not so much apparently, from fancying them present when not so, as from miscalculating the distances of objects really before him.

On the occurrence of these symptoms, danger impends either from the sudden access of convulsion with succeeding coma and death, or the passing of the disease into the 3rd stage, characterized by still increased frequency, (120) and feebleness of pulse, constant agitation, low muttering delirium, contracted pupils, rolling of the tongue within the lips and cheeks as if in search of objects in the mouth,—passing gradually into coma and terminating fatally in a few hours. On the occurrence of the symptoms described above as characterizing the transition of one stage into the other, it has appeared to me, that all narcotics should be completely intermitted; the head should be shaved, if such measure has not been already adopted at an earlier stage of the disease; a blister should be applied to the nucha; the hot foot bath should be used, and if the scalp be hot, cold cloths should be applied; camphor mixture should be exhibited every second hour either with a small portion of tartar emetic or spiritus ætheris nitrici, according to the state of the pulse and skin; wine should also be given; and the importance of mild nourishment, such as beef tea and chicken soup, ought not to be lost sight of. These means if adopted at the proper time and assiduously followed, are not unfrequently successful,—the patient falling asleep and awaking comparatively well. It is under these particular circumstances and also at times earlier in the disease, while yet *all* these conditions are not present, that the use of a blister to the nape of the neck is of very great utility. This is a point of practice which, as far I know, has not been estimated according to its importance; for it is generally stated, that the application of blisters, ought to be confined to the 1st stage of the disease; a remark in all probability correct as regards their application to the epigastrium, but not, in my experience, as regards their application to the nape of the neck or to the head.

In the course of these observations, I have anticipated the description of the symptoms indicating the 3rd stage, but it remains that a few words be said of its treatment. Supposing that the course above recommended has been gone through, a blister should now be applied to the scalp, camphor mixture ℥iss. with spirit æther. nit. ℥ss. should be given every second hour with wine and light nourishment. Under this treatment and

in instances in which the symptoms of the 3rd stage were fully formed, I have known recoveries to take place; but in these cases of recovery there is frequently room for suspicion that the symptoms have, to a certain extent been caused by the free exhibition of narcotics;—and the fact of recovery from a combination of symptoms which resulting in the natural course of disease, are almost, if not always, invariably fatal, is an additional argument, it seems to me, in support of the opinion that the too free use of narcotics complicates and modifies the symptoms of the 3rd stage.

It has been stated with much justice, I think, by Dr. Blake that when the pulse rises above 100, there is then room for apprehension. This is quite in accordance with my experience, care however being taken not to mistake a frequency of pulse caused by muscular exertions which the patient in his excitement may have been just undergoing,—for that frequency which is permanent, and which takes place when the disease is progressing unfavourably.

General remarks on treatment, blood-letting, general and local; purgatives; emetics, &c.

I have not thought it necessary to make any particular remarks on the use of general or local blood-letting in the treatment of delirium tremens, for with the exception of local depletion, in a few cases of the 1st species, I believe that all are agreed in considering such measures perfectly inadmissible. It is not often, indeed, (so rarely is it had recourse to) that there exists the opportunity of witnessing positive injury from general or local blood-letting in the 2nd species of the disease. Such opportunity does however occasionally occur, when it may have been thought necessary in consequence of the complication of local inflammatory disease, *e. g.* dysentery, to apply leeches; and I believe it may be very safely affirmed, that such measure is never adopted without a positive aggravation of the characteristic symptoms of delirium tremens.

In regard to *laxatives* or *purgatives* I have never used them in the 2nd species of delirium tremens, except with the object of removing existing constipation. Given with this view they are of course frequently required, but further than this, their exhibition does not appear to me to constitute any part of the treatment; and the causing of free purging in this form of the disease I can readily conceive to be frequently injurious. I am aware that in stating these opinions I am opposed to several very excellent writers;* but it must be recollected that I write of the disease

* Copland's Dictionary of Practical Medicine.

as observed in a climate in which affections of the bowels are common and easily excited; and in none of the diseases of which, according to my experience, is it admissible to use purgatives with that freedom which is often perfectly safe (and perhaps necessary) in the management of the diseases of extra-tropical countries.

In regard to *emetics* they may occasionally be useful in cases in the first stage, when the tongue is coated and white, and in which there are not present symptoms of gastric irritation. Cases of this nature are however rare, and consequently the utility of emetics in the treatment of delirium tremens is very limited.

There are other points of general management on which I have not thought it necessary to dwell, because all are agreed in regard to their importance, *e. g.* 1. The advantage of secluding the patient during the stage of excitement in a quiet and partially darkened room, carefully protected with barred windows and under a trustworthy guard. (2). The injurious effect of strait jackets or bonds of any kind, and the extreme rarity of their necessity when common management and tact have been observed. (3). The necessity of guarding against the well marked suicidal tendency which is frequently present.

Pathology of the Disease. The cases* narrated agree well with the opinion generally stated, that the appearances found after death are frequently trifling and not adequate to explain the phenomena of the disease. 1st. There is frequently more or less serous effusion between the arachnoid membrane and the pia-mater, into the ventricles, or at the base of the skull. (2nd). There is observed a state of dotted redness at the cardiac end of the mucous lining of the stomach, very frequently without alteration of the texture of the tunic, sometimes associated with a mammillated state of the mucous coat of the pyloric end or body of the stomach; but admitting the frequency of this appearance, it does not, I think, support the view originating, I believe, with Broussais and subsequently supported by Dr. † Hannay of Glasgow and others, that delirium tremens is caused by the gastritis. On the contrary, this appearance of the mucous coat of a stomach exposed to the habitual action of the strong stimulus of alcohol, is what ought to be expected, and without doubt exists in individuals with these habits, and at a time when there are not symptoms of delirium tremens present. The circumstances in the pathology of delirium tremens, which it is of most importance to regard as bearing on the probable unfavourable result, are the facts of the patient having frequent-

* See Page 49 and sequent. † London Medical Gazette, March 3, 1838

ly suffered from previous attacks of the disease, or of some local complication being present during the attack,—dysentery being the one which probably will be found to occur most frequently in the delirium tremens as observed in Bombay.

Tabular statement of admissions and deaths from Delirium Tremens in the European General Hospital at Bombay for the five years from July 1838 *to July* 1843, *with percentage of deaths on admissions; of admissions on total Hospital admissions; of deaths on total Hospital deaths, for the same period.*

	1838.*		1839.		1840.		1841.		1842.		1843.*		Total.		Monthly average of the five years.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Deaths per-cent of admission.	Admissions per-cent of total Hospital admissions.	Deaths per-cent of total Hospital deaths.	
January	"	"	3	"	"	"	5	"	6	"	4	"	18	"	"	3.2	"	
February	"	"	1	"	3	"	11	"	4	"	3	"	22	"	"	5.3	"	
March	"	"	1	1	"	"	4	1	3	"	3	"	11	2	18.1	2.1	6	
April	"	"	"	"	9	"	8	1	7	"	2	"	26	1	3.8	4.4	2.4	
May	"	"	6	5	6	2	11	8	9	1	10	2	42	18	42.8	4.7	22.4	
June	"	"	2	"	1	1	3	"	14	"	4	1	24	2	8 3	3.1	3.9	
July	3	2	1	"	4	"	3	"	6	"	"	"	17	2	11.7	2.3	5.4	
August	"	1	3	"	1	"	3	"	5	"	"	"	12	1	8.3	1.9	2.8	
September	"	"	4	1	5	1	6	3	3	1	"	"	18	6	33.3	3.3	11.5	
October	1	"	3	"	2	1	1	1	2	"	"	"	9	4	44.4	1.2	14.8	
November	1	"	5	"	1	"	3	"	3	1	"	"	16	1	6.2	2.3	2.1	
December	4	1	3	"	5	2	5	1	5	"	"	"	22	4	18.1	3.5	6	
Total	9	4	32	7	37	7	62	15	71	5	26	3	237	41	17.8	3.1	7.5	annual average of five years
Deaths per-cent of annual admissions of Delirium Tremens.	33.3		21.8		18.9		24.1		7		11.5*							
Admissions per-cent of total annual Hospital admissions.	2.1		2.3		2.7		4.1		3.4		2.7							
Deaths per-cent of total annual Hospital deaths.	13.8		7.6		6.6		13.5		3.2		6.							

* These columns viz. for 1838 and 1843 it will be seen are calculated from the admissions and deaths of the half year only, and, in drawing any general annual average, should be left out of the calculation.

Article VI.

Annual Report of the Sick in Hospital of the *10*th Regiment N. I. Stationed at Aden, for* 1842. By J. Scott, Esq. Surgeon.

Presented by the Medical Board, May, 1843.

There has been a gradual and very marked improvement in the condition of the 10th Regiment during the latter part of the past year, as compared with that which it had previously exhibited since its arrival at Aden.

I received charge of the Regiment on the 12th January 1842; and, in a letter of the 30th March, I reported to the Superintending Surgeon

* *Stationed at Aden.*

Strength	1131
Included in the Returns on the 31st December	662
Absent on command beyond the Division or on leave	469
Total	1131

Number of Sick.

Remained 31st December 1841	107
Admitted in 1842	573
Discharged	641
Died in Hospital	19
Remaining 31st December 1842	20
Average daily number of Sick for the year	$36\frac{63}{365}$
Average number of Convalescents	$\frac{256}{365}$
Died without receiving medical treatment	2

that I anticipated a further stay at Aden would have very serious effects on the Regiment; and I founded my opinion on these facts, that the number admitted into hospital in 1841 was 1189, and the number of deaths in the same year 41, that the number of sick during the months of January, February, and March 1842, averaged 84, 82, and 70, while many of those in hospital had been long confined with scorbutic and rheumatic affections, and several cases occurred of that chronic peritonitis which has invariably proved fatal here; besides which, a great number, nearly 300, had already been sent to Bombay, at various times, on account of sickness.

The result, however, has been fortunately otherwise than I anticipated; the numbers in hospital have gradually declined, as the following statement of the monthly averages will show.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	The year.
1841	57	53	57	71	32	41	66	60	87	99	118	108	71
1842	83	82	70	35½	23	22	24	23	20	23	16	13	36

The number of deaths at Aden in 1841 were 41; in 1842 they were 21. The number sent sick to Bombay for the benefit of change in the former year were 82, in the latter 41; of these 38 died in 1841, and 17 in 1842. In 1840, 52 died in Aden, and 207 were sent sick to Bombay.

Changes since 31st *December* 1841.

Recruits joined	8
Discharged from the Service on account of diseases	
Discharged from the Service on account of other causes	5
Invalided	4
Pensioned	21

Supplementary Table to the Annual Report for 1842

Diseases.	Number admitted during the year.	Discharged.	Died.	Remaining.	Average age of Patients.	Average number of days under treatment.
Fever	193	185	1	7	30	9
Hepatitis	4	2	1	1	22	34
Dysentery	7	7	"	"	29	9
Cholera	"	"	"	"	"	"
Diarrhœa	16	16	"	"	26	5

It is a matter of much interest and importance to define what are the circumstances which have produced so favourable a change in the state of the Regiment, and I will here endeavour to point out those to which I am inclined to attribute it.

It may in the first place be presumed, I think, that the climate had not been the sole, or even the chief cause of the sickness which the Regiment formerly experienced, since, had it been so, that sickness, instead of diminishing, would have increased as its influence continued.

The average strength of the corps at Head Quarters had been somewhat less in the past than in the previous year, viz. 720 in the former and 820 in the latter, in consequence of casualties and the removal of sick to Bombay. But though this might lower the number of sick in hospital, it could only do so to a small extent.

During the first two years of the stay of the corps at this station, at which they arrived, in greater part, in January 1840, the duty was much more harassing than it has been of late, from the disturbed state of the tribes in the interior, and the frequent alarms of night attacks which arose therefrom, obliging the men to be frequently under arms, and to march to distant points of defence during the night. Nothing of this kind has occurred during the past year, and the men have had no more than ordinary garrison duty to perform.

The state of the country rendered the supply of vegetables and other articles of food from the interior, especially during the first year, very scarce and precarious; during the past year the supply has received no interruption, and has been pretty ample of such things as the country affords.

An improvement which I suggested has been made in the tents occupied by the sepoys on out-post duty at the Turkish wall, in the erection of platforms within them, a few inches above the ground, on which the men rest instead of on the sandy soil, which had always some dampness in it from saline impregnations.

The difficulty of procuring provisions, and the consequent high price which they bore, engendered among the men, it is said, a habit of saving their money, which they retained, when those causes no longer existed, and carried to an injurious extent; this practice I believe is now diminished, and the men moreover appear to have much less dislike to the station than they formerly had.

All these circumstances have had, I conceive, an influence in improving

the health of the Regiment, but another, and I am inclined to think the chief cause, has been a change in its position.

The ground on which it was formerly pitched was in many parts damp and impregnated with saline matters, while in the neighbourhood of the huts, at certain high tides, the sea water percolated through the soil and stood in pools on its surface.

As this was the situation fixed upon for the permanent station of a Native Corps, in order that the pendals to be erected for it might be proceeded with, the Regiment in May last was moved to the northern part of the valley. There the ground is higher and perfectly dry, and is sheltered from the winds by the proximity of the hills, more especially by those to the westward, from the violent hot and dry winds which prevail during the hot season from June to October.

I am the more inclined to regard this change of position as a chief cause of the improved state of the 10th Regiment, from this, that it is in the same situation on ground adjoining that now occupied by the 10th Regiment, the Wing of the 16th Regiment has been located ever since it came to Aden, and its immunity from sickness, as compared with the former Regiment, has always been remarkable.

Having this opinion I am inclined to regard it as a matter of regret that the situation the Native Troops now occupied, was not fixed upon for the permanent lines to be made for them. At the same time, there is reason to hope that the improvement which has been made in the ground on which they are to be erected, it being levelled and filled up in some places, 14 or 15 feet, together with the construction of substantial pendals now in progress, may diminish what prejudicial influence the situation formerly had.

In conclusion on this subject I would observe that, from the state of the 16th Regiment since they have been at Aden, and the improvement that has lately taken place in the condition of the 10th, there appear to me to be sufficient grounds for believing, that a Regiment which may come hereafter to this station, if properly housed and sheltered, and enabled and induced to consume a sufficiency of wholesome and nourishing food, may enjoy as good health as in most stations in India.

At the same time the facility of sending men to and from Bombay by the steam packets, and thereby affording to particular cases the benefit of a temporary change of climate, is an advantage to the station of great importance that should always be held available.

I subjoin an abstract of the Register of the Thêrmometer kept in hospital during the year.

Abstract of the Register of the Thermometer during the year 1842.

	Temperature.				Variation.			
	Mean at 6 A. M.	Mean at 3 P. M.	Maximum at 3 P. M.	Minimum at 6 A. M.	Maximum in one day.	Minimum in one day.	Mean daily.	Maximum of the month.
January	74	80	82	75	6	2	3.6	7
February	76	82	85	72	13	4	6.0	13
March	78	84	86	74	9	3	5.9	12
April	81	86	88	80	7	1	4.0	8
May	83	90	99	77	14	4	7.3	26
June	86	95	99	83	16	4	8.4	16
July	87	94	98	85	13	5	7.2	13
August	84	93	99	80	16	4	7.8	19
September	83	90	95	74	13	2	7.0	21
October	81	87	93	74	12	3	6.1	19
November	77	83	89	74	11	3	6.1	15
December	77	81	83	74	6	0	3.7	9
For the year	80	87	99	72	16	0	6.09	year 27

Few of the diseases that have prevailed in the 10th Regiment during the past year require particular notice.

Fevers have not been frequent, and those which have occurred have been generally of a mild intermittent type, and easily subdued.

Scurvy has been much less prevalent than during the former part of the Regiment's stay here ; indeed the diminution of a scorbutic tendency throughout the corps forms perhaps the chief part of that amendment which has taken place in it generally.

Rheumatic affections have been frequent and obstinate, more especially when combined with scurvy.

There have not occurred in the Regiment, during the period under review, any of those formidable ulcers which have obtained the title of "Aden Ulcers;" but even small sores caused by slight bruises have always been very long of healing, and sometimes very painful. For these I have found the best local remedies to be the red precipitate ointment, black wash, a solution of sulphate of copper, and, when the edges become elevated and the whole sore indolent, in which state none of the above produce any effect, pressure made by a copper coin bandaged over them.

I have seen some very bad ulcers among the poor and most destitute of the inhabitants of the town, destroying, by sloughing, large portions of the soft parts of the feet and limbs, even to the separation of a foot at the ankle joint. In these, local remedies have little effect, unless the

system can be improved by constitutional remedies, above all by good food,—their character depending on a general state of the body engendered by bad diet, want of clothing, and every other concomitant of miserable living. On that account, I have never attempted amputation as a remedy, expecting that the wound in the stump would assume the same character as the original disease, and I believe it has never succeeded with those who have tried it.

One disease deserves a more particular notice, that which I have denominated *chronic peritonitis*, as deriving an unfortunate importance both from its frequency at this station and its very fatal character.

This disease as I first saw it was in the form of dropsy. On joining the 10th Regiment in January last, I found several cases in hospital, most of which had been there a considerable time and had decided abdominal effusion. I was told that the disease had been of frequent occurrence in the Regiment, and that it had always in longer or shorter time proved fatal.

As I first saw it, there was in all the cases, as I have said, an evident effusion into the abdomen, attended with pain of that region in different situations, bad appetite with distressing distension of the abdomen after eating any thing, and the urine very high coloured.

In some, more especially in cases of long standing, there was hardness and fulness in the upper part of the abdomen, either in the right or left hypochondrium or in the epigastrium—most generally in the latter.

Subsequently, cases came into hospital in which there was no effusion, but which the other symptoms and the progress of the malady showed to be the same complaint in a more incipient state.

As I have now seen it in 29 cases, the following appear to me to be the characters presented by the disease, in its commencement and in its progress.

A man complains of pain in some part of the abdomen, generally about the umbilicus, which is increased by pressure but never amounts to great tenderness.

This pain very frequently is accompanied with a pricking or burning sensation over the fore part of the abdomen, and in some cases these sensations are the only kind of pain complained of. There is invariably a want of appetite and a distension of the abdomen after eating any, the lightest and most scanty meal, which becomes the more distressing as the disease advances; very often, at a later period, any thing that is taken into the stomach is immediately rejected.

The urine is generally scanty, often scalding, and almost invariably of a very dark colour ; I have seen few cases in which this symptom did not exist at first, and in these it came on afterwards.

Sometimes the patients state that they have been so affected for a considerable time, several weeks, indeed the symptoms have so little urgency in their character that they are frequently borne with, until the loss of appetite becomes so complete as to induce the patient to seek relief.

Other symptoms may be combined with those above stated, according to the degree in which the different viscera become affected by the disease; thus in many the eyes are tinged yellow, and in some the liver can be felt some distance below the edges of the ribs shewing that this viscus is implicated.

There are no febrile symptoms, the pulse is little if at all affected, either at the commencement or during the progress of the complaint, until the failure of the powers of the system has its influence on it. The bowels are generally regular, though from the small quantity of food used but little feculent matter is passed.

In one or two cases only have I seen anasarcous symptoms in the face and limbs. The urine, in those cases in which I have tried it, was not coagulable by heat.

During the progress of the disease little change takes place in the symptoms until the appearance of effusion, the period for which is very various. Some men do not come into hospital until this has commenced, while of those who seek relief early, it appears in some in a few days and the disease ends fatally within a month from its commencement, but others continue to suffer from all the other symptoms for several weeks without any signs of effusion, and several have been sent to Bombay for the benefit of change without any appearance of it.

Doubts might be entertained whether in these the complaint was of the same serious nature, the symptoms having so little of a serious character, only a pricking pain in the abdomen, with loss of appetite and high coloured urine; but the exact similarity seen between these and others, until in the latter, effusion commenced, showed clearly that the difference existed only in the amount of progress which the disease had made and that the former if permitted, would proceed to the same result.

I may here mention, that it was this circumstance, the existence for some time of marked symptoms of disease without effusion, that led me to adopt another name than that of "ascites" which had been applied to previous cases.

As I have said the disease may be complicated with a variety of symptoms, but it appears that those which are invariable, and which may therefore be regarded as diagnostic of the complaint, are pain in some, generally the fore and middle part of the abdomen, a want of appetite with distension after eating, and high coloured urine. I have seen no case in which these symptoms were combined that did not prove to be one of the disease I am considering.

From the obstacles arising with natives I have only had opportunities of making post mortem examinations in three cases. In all of these the liver was disorganized, hard and granulated in texture, and of a greenish straw colour; the spleen in each was healthy.

The peritoneum, in all, was of an opaque white, and in two there were extensive deposits of coagulable lymph among the intestines, and in all three the coats of the stomach were thickened, with appearances of inflammation extending over their mucous coats. No appearance of disease was seen in the kidneys.

From the above description, it will appear, that the disease is exceedingly insidious; an incurable complaint being often established before it is complained of, and the symptoms even then seeming to possess no great urgency, till experience has shown to what they may lead.

It appears certainly to be almost identical, if not entirely so, with what is called Idiopathic Ascites, and the cases of the disease which occurred previous to my taking charge of the 10th Regiment were designated as Ascites. But although the effusion is a very marked and palpable symptom, and as far as I have seen, an invariable one before the disease comes to its fatal termination, yet as there are in some cases the previous symptoms existing a considerable time, yielding to remedies or at least checked by them, without the appearance of effusion, I have thought that the disease required a designation applicable to its early state; and as I believe from the symptoms during life as well as the post mortem examinations I have been able to make, that it is primarily and essentially a disease of the peritoneum, I have called it Peritonitis.

The disease differs much however from the acute inflammation of that membrane, nor does it resemble the chronic form which follows that; it may perhaps therefore be considered a subacute inflammation, its peculiar character depending on a debilitated state of the constitution.

It appears to me that the disease commences in the external peritoneum, extending into the processes of that membrance which invest the va-

rious viscera, and exerting in these an unhealthy and disorganizing influence by which their functions are deranged.

The pain which is first complained of is generally in the umbilical region, occasionally in the epigastrium.

As the disease proceeds, the loss of appetite and the distension which food produces, indicate that the stomach has become implicated and that its powers are diminished, and the same state I have thought to be evinced by the little effect produced by some medicines. The jaundiced state of the eyes shews a derangement in the functions of the liver, and in some protracted cases this organ becomes much enlarged, forming hard tumefactions that extend from 2 to 3 inches below the edge of the ribs.

That the kidneys are affected, at least functionally, is evidenced by the state of the urine, but no pain is complained of in their region.

The following account taken from the "Cyclopædia of Practical Medicine" seems to refer to a similar disease.

"The primitive form (of Chronic Peritonitis) may commence in a slow and almost insensible manner, without presenting any very obvious symptom. There may not be abdominal pain at its commencement or during its course, and it may only exhibit the appearance of simple Ascites; in many cases we cannot ascertain with any certainty its presence during life, but when it is more open in its characters, they are identical with the consecutive form, the symptoms of which vary considerably in the early stages. It is in general attended with some abdominal pain which is mostly deep, not very acute, and rarely permanent; in many cases the patient only complains of pain when his abdomen is pressed either by the hand or the action of the surrounding muscles, or on a sudden shock of the body. There is occasional vomiting and more or less distension of the abdomen, which sometimes becomes tympanitic, and in some cases indurated spots can be felt which are tender to the touch. Emaciation, irregular bowels, either constipation or diarrhœa or the one alternating with the other, increasing distension of the abdomen, and inability to bear even the pressure of the ordinary dress, if at all tight, various dyspeptic symptoms, and general debility, mark the progress of the disease.

"The alvine evacuations are sometimes of a pale colour and peculiar fœtor, in other instances of a dark appearance, and sometimes nearly natural."

* * * * * *

"In some patients the appetite is often preserved, and the di-

gestion is but little deranged, in which cases we may conclude that the peritoneum reflected over the stomach is not very deeply involved in the disease."

* * * * * *

"The general phenomena are very obscure: the pulse is often natural except towards evening when it becomes quick.

"In some forms of the disease the abdomen becomes augmented in volume, yields a dull sound on percussion on a part or the whole of its surface, and occasionally presents the sense of fluctuation more or less obscure.

"With more or less of these symptoms the disease advances slowly, and sometimes remains stationary for several months, and even may in some cases present some temporary amendment; but it generally terminates fatally either by the supervention of acute peritonitis or enteritis; or the patient sinks from exhaustion, the result of long continued irritation or diarrhœa. In some instances ascites precedes the fatal termination, or purulent effusion into the abdominal cavity takes place. * * *."

In the above description, while there are some symptoms mentioned which have not occurred in the cases I have described, there appears enough of coincidence to shew that a similar disease is alluded to and the same view taken of its nature as I have adopted.

Of the causes of the disease, predisposing or proximate, I am unable to give any definite opinion; as I have said it is most insidious in its origin and earliest stage, and generally has made some progress before the patient feels that he is unwell. I am therefore inclined to think that exciting causes may be left out of consideration, and that if any circumstances could be classed as such, they would be what in other cases might produce fever, rheumatism or similar affections, the different results depending on some particular state of the constitution which may be regarded as the primary or predisposing cause.

This state of constitution must have its origin in the circumstances attending the residence of the natives at this place.

From the want of vegetation the climate of Aden is comparatively a dry one, tempered by its almost insular situation; to Europeans it has proved very healthy, but the native troops, and more especially the 10th Regiment have suffered much during the three years they have been here.

This effect however is perhaps not attributable to climate alone, but to it in conjunction with other unfavourable circumstances depending on the political state of the station. The native troops have never had

proper accommodation, they have been in huts, and from various causes have been moved several times; for a considerable period, I am told, their situation was in low ground, where the infiltration from the sea through a sandy soil kept it constantly damp with saline impregnations. For a considerable time the frequent reports of intended attacks by the Arabs rendered the duty harassing and that, too, generally in the hottest season; and above all, the same unsettled state of matters kept the communication with the interior closed at various times, and thereby totally excluded a supply of vegetable food. From these causes, fever, scurvy, and rheumatism, have greatly affected the Regiment, — scurvy, very generally complicating the attacks of the others.

As the disease in question has appeared under these circumstances, it might be supposed that its character depended on a scorbutic taint, but it is not accompanied with the ordinary symptoms of scurvy; and that it does not partake of that state I would argue from the fact that the system is with difficulty brought under the influence of mercury which generally produces a powerful and pernicious effect in scurvy.

All therefore that I can say of the cause of this complaint, is, that it seems to depend on some impaired condition of the system, and to be a disease of debility. Perhaps what excites rheumatic pains in the muscles and joints of one man, fixes on the peritoneum in another and creates this complaint. It has been most prevalent in the commencement of the cold season.

It has been most frequent I believe in the 10th Regiment, but has also occurred in the 16th Regiment and the Golundauze, but has never appeared in Europeans.

In regard to the prognosis of the disease, all attempts to cure it here have proved so unsuccessful that I can say little on the subject. Wherever effusion had attained any extent, the disease has proved fatal. In a few cases, where relief was sought early, the disease was checked and effusion apparently prevented for a time; all such cases were sent to Bombay in hopes that a change of climate might have a beneficial influence and assist the cure; a few lives may thus have been saved, but the following statement, which contains the last information obtained regarding them, will shew that these must be few, of 29 cases that have been in hospital in 1842, one returned to duty, nine died, and nineteen were sent to Bombay; of these seven have since died, and of the result of the others I have not yet obtained any particular information.

Of 24 cases in 1841, six died, seven were sent to Bombay, six were

discharged to duty, and five remained in hospital. Of the seven sent to Bombay, four died; of those discharged, one relapsed and was sent to Bombay in 1842, the remainder were only two or four days in hospital,—it is therefore probable that the disease was mistaken, or perhaps it was feigned in order to be sent to Bombay.

In regard to treatment, from what has been already said, it will not be expected that I can say any thing satisfactory on this point. The cases I first saw having advanced to the state of ascites, diuretics of various kinds were tried, digitalis, squills, and blue pill, in combination, the salines, iodine, — but no benefit was derived from them, and indeed the urine was seldom found to be at all affected by them.

In those cases which I afterwards saw previous to effusion, I used cupping, leeches, blisters and sometimes turpentine fomentations, repeated according to circumstances, and attempted to affect the system with mercury, giving calomel in doses of 4 and 5 grains 3 times a day combined with 1 grain of opium; but in very few cases did its influence appear in the mouth, even though given in this way for twelve or fourteen days.

Sudorifics were sometimes administered and diuretics were persevered in after effusion had commenced. Tonics of various kinds were tried at different stages of the complaint, but never seemed to be of service.

In some cases opium was given alone, $1\frac{1}{2}$ grain three times a day, previous to the appearace of effusion, and in one or two seemed to have a beneficial effect.

Paracentesis has been practised in a few cases by myself and others, to relieve the oppression which the extent of the effusion caused, but seemed rather to accelerate than retard the termination.

The medicine which has given most hope of success is colchicum, used after depletion and calomel.

Partly from not seeing the disease at first till it was far advanced and partly from the impression of its depending on a debilitated state of the system, I did not at first try general blood letting. In those cases which have appeared lately however, where the disease had not advanced beyond its first stage, I have commenced the treatment with a bleeding to fourteen or sixteen ounces, following it by the application of leeches, repeated according to circumstances, and then by blisters; while calomel was given in doses of 4 or 5 grains combined with one grain of opium three times a day from the commencement.

When by these means the pain and other symptoms have been subdued

or abated, I have given the vin. colchici half a drachm three or sometimes four times a day, and it has appeared to me in some cases with good effect. I was induced to try this remedy as well from the idea that the disease might be akin in its nature to rheumatism, as from its being recommended by some as a sedative in inflammatory disease generally. But as I have always taken the first opportunity to send those who had or were threatened with the complaint to Bombay, I cannot say more of even this treatment, than that it seems to have checked the disease and allowed this last resource to be tried.

Aden, 1st January, 1843.

Article VII.

Example of the beneficial influence of change of climate, on the health of Europeans in India. By Arthur S. Thomson, M. D. Assistant Surgeon, 14th Light Dragoons.

Presented, October 1843.

"*What inquiry can be so useful as that which hath for its object the saving of the lives of men. The prevention of diseases cannot consist in the use of medicines.*" "Sir John Pringle."

When it is considered that the Bengal Civil Servants die, at the rate of about two per cent. annually, * that the commissioned officers of the Indian Army suffer about the same loss by death, † and that the European soldiers die at the rate of about four per cent per annum, we are unavoidably forced to the conclusion, that the soldier is exposed to other causes of disease, than simply the tropical climate.

Facts like the above, and others might be quoted, which demonstrate beyond doubt, that the mortality among soldiers in the time of peace, might be much reduced, by ascertaining and endeavouring to avoid the causes of disease. Inquiry on this subject is, however, too often checked from a strong conviction, that intemperance is the root of all the evil. It certainly must be admitted that intemperance is a fertile, but it is not the sole cause of the excess of the mortality among soldiers; and granting it even were, means can surely be taken to lessen the sickness which it produces, either by change of climate or other arrangements.

* Mr. Prinsep Secretary to the Bengal Government, 46 years observation.

† See the mortality among officers during a period of twenty years as given by Mr. Curnin in his proposal to establish a retiring fund in the Indian Army; also papers by Major Tulloch in the United Service Journal.

It is therefore with no other object than that of endeavouring to promote inquiry, so that the sickness of even one man might be prevented, that I intrude the following remarks, for in the words of Lord Bacon, "I hold every man a debtor to his profession, from the which, as men of course doe seeke to receive countenance and profit, so ought they of duty to endeavour themselves, by way of amends, to be a help thereunto."

Organic diseases supposed to be injured by a certain change of climate. It has been laid down by those who have examined the effect of climate on invalids and convalescents, that the transference of men, having a tendency to organic abdominal disease, from a warm, moist and equable climate, such as Bombay, to a cold, elevated, dry and variable climate, such as Poona, is not to be recommended.*

This supposed injurious effect of climate, is, I think, more established on physiological reasoning than on practical observation by statistics, at least, it is opposed to the following practical result, which is drawn however from limited materials for observation, and therefore it is to be received with caution.

Instance of the benefit of change of climate in men suffering under a disposition to organic disease.

A wing of H. M. 17th Regiment, 380 strong, garrisoned Bombay during the rains of 1840, and were stationed for five months in the Town Barracks which are in the interior of the fort: during the seven months the wing was at Bombay, at most, two cases of disease, chiefly fever (which was slight and of which only one or two men died) occurred, and during the fever, hepatic and other complications were observed.

On the 28th November 1840, nearly 300 of the men (of whom seventy were sick) left Bombay for Poona, and the remainder of the wing, between sixty and seventy men, were left to do duty in Colaba, Bombay. On the march to Poona, and two or three days after their arrival there, hepatic and dysenteric cases of the most inveterate nature were admitted into hospital, and many proved fatal, but these admissions I attribute entirely to the climate of Bombay, as some days before leaving it, similar cases were coming into hospital. I will therefore take the

* In the first No. of the Transactions of the Society, there is a paper on this subject; also in some of Dr. Hunter's papers; and in a late number of the Madras Medical Journal.

deaths of those men admitted ten days after the arrival of the wing at Poona, as a test of the injurious or beneficial influence of the change of climate.

On referring to the Registers, I found, that from the 14th of December 1840, until the 31st March 1841, out of the men at Poona 18 died. For the same period, out of the 70 men, left at Bombay to do duty, 8 died. At Poona the mortality was therefore about six per cent, and at Bombay it was so high as eleven per cent. Almost every fatal case both at Poona and Bombay was dysentery, most generally complicated with hepatic abscess. It is necessary to state so as to render the benefit of the change more obvious, that of the 300 men sent to Poona, about seventy were sick men, requiring carriage, while of the men left for duty at Bombay, care was taken to select the most healthy and none were sick. When the men were dying at Poona of the dysentery and hepatic disease, it was then attributed to their removal from Bombay at an improper season; and in the Annual Report of the Regiment, this was given as the cause, an opinion which was found to be so incorrect, only when a numerical comparison was made.

Remarks. The conclusion to be drawn from the above fact, is, that Europeans quartered in an unhealthy station ought to be frequently changed, at least after the unhealthy season is over; for it is well known that many constitutions will resist an injurious climate for some time, but if exposed to it, for a year or two, they will either die, or become useless to the service as soldiers, whereas if the period of residence in an unhealthy place be broken, by a few months' residence under a more genial climate, both the body and spirits of the soldier will be improved. No theoretical ideas (unless supported by facts) should prevent the frequent change of European troops from an unhealthy to a healthy station, however dissimilar the climate may be, for there are many instances of a sudden transition of climate being beneficial. I shall here quote one or two of them.

1st. When the crew of a ship of war on the tropical West India station, becomes sickly, a short run of a few days, to the frigid climate of the North American station, gives health and vigor to the crew, which might have become useless from sickness if the ship had been detained in the tropics. *

2d. When Regiments are transferred from the West India Islands

* Report on the health of the Navy.

to the frigid climate of Canada, the health of the men invariably improves and no well marked bad effect results. *

3d. In addition to the three hundred men of the 17th Regiment sent to Poona, losing fewer men by death than those at Bombay, the difference in the appearance of both classes was very great at the end of six months: those at Poona looking much healthier than those at Bombay.

The only objection to the removal of troops immediately after the sickly season, is the exertion of marching which cannot fail of being injurious. The less exertion the men are required to make, the less will they suffer; for when the fatigue of marching becomes painful, as it must be to the delicate men, it becomes injurious. The removal ought therefore not to be made until a month or so after the sickly season, so that the men may improve somewhat in strength, — and no march should exceed ten miles. Bowel complaints are generally much aggravated by the motion of a doolie and ought therefore not to be taken with the Regiment.

Although the feelings of soldiers are rarely considered, yet by letting them know, they are only to be quartered in an unhealthy station for a short time, hope, that solace of the sick man, is given, and that recklessness and despondency which is created among bodies of men when death is frequent from sickness, and which circumstance often drives them to drink, might be prevented. The sick in hospital would cheer themselves up with the prospect of the change, and those at duty would endeavour to keep out of hospital, knowing that in a short time they will march to a better place.

* Report of the removal of the 65, 36, 69, 37, and 87th Regiments from the West Indies to Nova Scotia, by Staff Surgeon Elliot. Edin. Medical Journal, April.

Article VIII.

Notes on the treatment and pathology of Intermittent and Remittent Fever as observed in the European General Hospital at Bombay, during the five years, from July 1838 *to* July 1843. By C. Morehead, M. D.

Presented, December 1843.

During these five years, 1839 cases of fever of all kinds have been admitted into the European General Hospital, which is at the rate of 24.2 per cent of the total admissions. The number of deaths has amounted to 66, which is equivalent to 3.5 per cent of the admissions, and 12.1 per cent of the aggregate deaths in hospital.

Such is the average of the five years, but the per centage of admissions from fever, on the total admissions, has varied in different years; (e. g.) in the year 1841, it was as high as 31.3; and in 1840, it stood at 20 1. But the difference of ratio of the fevers to other diseases is still more striking in different months, — thus again taking the average of the five years, the rate in October is as high as 44. per cent, and in February, as low as 13.3.

With the view of shewing the comparative prevalence of fever in different seasons, let us divide the year into two equal periods, the first half extending from the beginning of December to the end of May, gives (of fevers) 15.8 per cent of the total admissions, and the half year from the 1st June to the end of November exhibits a per centage of 31.

The rate of mortality from fever, when considered with reference to the number annually admitted, would seem to observe a just relation to the prevalence of the disease. In the year 1841, when the per centage of admissions was 31.3, the per centage of deaths of these was 4.9, and 20.7 of the total hospital deaths; whereas in the year 1840, in

which the admissions were 20.1 per cent, the deaths were 2.5 and 6.6 respectively.

But when we again take the average of the five years and consider the rate of mortality with reference to the number of monthly admissions, the result is very different. In October with the admissions of fever 44 per cent, the deaths are 1.8 ; and in December with the admissions 15.3 per cent, the deaths are 8.5.

Let us also consider the rate of mortality from fevers with reference to the division into half years. During the first half year, from December to June with the admissions at 15.8 per cent, the deaths are 4.8 per cent of the admissions, and 9.1 per cent of the total hospital deaths ; in the second half year when the admissions are 31 per cent, the deaths are 3.3 per cent of the admissions, and 16.9 per cent of the aggregate deaths.

In the tabular statement (No. 1) which is annexed to these notes will be found the data on which these calculations are grounded. They must not however be held necessarily to represent accurately the comparative state of health of the island of Bombay during the years to which they refer ; because the inmates of the General Hospital are not the sick of a fixed community but of one whose numbers fluctuate, and moreover in years of great sickness the hospital is exposed to a temporary and occasional influx of the sick of communities who, under ordinary circumstances, are accommodated elsewhere, — for example, in the month of October 1841, the admissions of fever are 143, but in the same month of any other year they do not rise to 70. Though the inference, that in the year 1841 fever prevailed more in Bombay than in any of the other five, would be perfectly correct, — still the degree is erroneously expressed by these numbers, because of the 143 fevers admitted in October 1841, 100 were of H. M.'s 17th Regiment, a class of patients generally treated in the Regimental Hospital, but sent on this occasion to the General Hospital, as a measure of convenience.

The fevers received into the General Hospital have been classed in the official returns under the heads * Intermittent and Remittent, which

* I do not think that any difficulty has been experienced in classifying the fevers observed in the General Hospital. I have never witnessed a case which could be classed with the synocha or synochus of Cullen. The occurrence of typhoid symptoms in cases of protracted remittent is not very uncommon, and will be afterwards noticed in these notes ; but these arise under very different circumstances from the analogous symptoms in the continued fever of temperate climates.

division, though not insuring perfect nosological accuracy, is sufficient for practical purposes. In the remarks which I propose to make, I shall observe the following order : —

1. Intermittent Fever.
2. Remittent Fever.
3. Pathology of Intermittent and Remittent Fever.
4. Remarks on some of the chief remedial means which there may not have been opportunity of conveniently considering under the 1st and 2nd heads. (e. g.) Blood-letting ; cold affusion ; blisters ; emetics ; use of calomel ; of purgatives ; of quinine ; of opiates ; of change of air and climate.
5. Tabular statements shewing the admissions of fevers of all kinds ; of Intermittent fevers ; of Remittent fevers ; and of Ephemeral fevers.

I.

Intermittent fever.

The admissions from intermittent fever amount to 1503, equivalent to 81.6 per cent of the total admissions from fever, — the number of deaths being 18 or 1.1 per cent of the admissions, and 27.2 per cent of the total deaths from fever. But in the numbers entered under the head of intermittent fever in the hospital returns, 159 cases designated in the register, "ephemeral fever" have been included. Thus, to ensure nosological accuracy, the statistical statements made in regard to the admissions from intermittent fever should be subjected to a deduction of 10.5 per cent. This correction I have not attempted to apply in this place, because it would have caused an apparent discrepancy between these statements and the hospital records, which I have thought it desirable to avoid ; and as a more expedient course I have supplied a tabular statement (No. 4.) containing the data necessary to effect the correction desired.

The inmates of the General Hospital, suffering from intermittent fever, may be appropriately divided into two classes. — 1st. Those affected with intermittent fever endemial to Bombay, consisting chiefly of seamen, the military staff of the Garrison, and the poorer classes of the fixed resident European community. 2nd. Persons affected with the more obstinate endemic of other localities, and who are either sent to Bombay with the view of being benefited by the change, — or who arrive here, at certain seasons, in the round of their professional avoca-

tions. This latter class consists almost entirely of seamen, very generally of the Indian Navy, affected with intermittent fever acquired in the Persian Gulf, the Red Sea, and latterly, during the late operations, on the Coast of China, or in the Steam Fotilla of the river Indus. This class generally reaches Bombay after the opening of the season subsequent to the monsoon, viz. in the months of November December, or January, having been exposed to the autumnal endemic of these more malarious countries.

There will be a practical advantage in considering these two classes separately.

The endemic intermittent of Bombay is in general sufficiently tractable; most commonly, in the first attacks, assuming the quotidian form, with after a day or two a marked tendency to become tertian in its type. Though easily checked, the * liability to return is well marked, and in instances of frequent relapse the type is generally tertian. The complications for the most part are of little importance and enlargement of the spleen is not common.

These remarks are intended to apply to the endemic as it appears at all seasons, for, I do not find that the first attacks of vernal intermittents have less tendency to put on the quotidian form, than the similar attacks in the autumnal months. But in considering the comparative frequency of the different types of intermittent fever, it must be kept in view, that, when the principle of treatment pursued has been invariably to check the disease at the earliest possible period by the free exhibition of quinine, the types are undoubtedly modified, and attempts at perfect nosological accuracy are necessarily frustrated.

The cases of the second class are, in general, more obstinate and the type most commonly tertian;—the subjects of the disease being frequently sallow, reduced in flesh, and strength, with a state of constitution more or less cachectic, and not unfrequently affected with enlargement of the spleen, — occasionally with diarrhœa and tendency to dropsical effusion.

Treatment. In first attacks of the endemial intermittent fever of Bombay, it is generally necessary to commence the treatment with an

* The most obstinate endemic intermittent that I have witnessed in the General Hospital, was in the men of Her Majesty's 17th Regiment, received into Hospital in October 1841; and this was the sequela of the fever from which the Regiment had suffered so severely, while at Colaba, in the monsoon months, and which has been so well described by Dr. Arthur S. Thomson in the Society's Transactions, No. 5.

emetic and purgative ; but afterwards in these, as in all the other forms of the disease to which my present remarks are intended to apply, the only important indication is to prevent the recurrence of the paroxysm by the suitable administration of quinine during the several intermissions, —the very earliest of which can, in general, be taken advantage of with perfect safety. The manner of exhibiting quinine which I have found most effectual is to give a full dose, from three to ten grains, about two hours before the expected paroxysm, to repeat it every hour for three doses or till the hour of expected accession has been well passed, and then to continue half the quantity every hour for two more doses. From four to five grains will generally be found sufficient in the endemic of Bombay, three grains being, for the most part, too little; but in the obstinate endemic of more malarious countries, those classed under the 2nd head, it is often necessary to give eight, or ten grains, — the latter dose is not very frequently required, and I do not recollect ever to have found it necessary to exhibit a larger one. Should, by these means, the paroxysm be prevented, it is of course necessary to continue the quinine in the same manner, but in decreasing doses, for several successive days at the anticipated period of accession.

In the management of regular intermittent fever the treatment during the paroxysm is of comparatively little consequence. In first attacks when the constitution is vigorous and the vascular action of the hot stage considerable, it may doubtless be expedient to use the cold affusion, and exhibit antimonial diaphoretics; and when local determinations of blood, to the head for example, cause much discomfort, the application of leeches will be useful; but general blood letting is in ordinary cases seldom necessary.

In cases of frequent relapse and in which the several stages of the disease are well marked, I am convinced that much harm is often done by too active interference during the hot stage. It is no doubt true that during this period there is frequently headache or pain of the hypochondria, very generally of the left, for which, when dependent on increased determinations of blood, it may be expedient to direct local depletion; but very frequently such pains do not require this kind of treatment for their removal, and in cases which have been protracted for some time, there can be no doubt, that frequent leeching, the too free use of purgatives, mercurials, and too prolonged a course of low diet are prejudicial from their tendency to induce a state of confirmed cachexia. Nor is local depletion always successful in such cases, in removing headaches and

pains of the hypochondria, for very frequently it will be found that though for the time the pain may have been alleviated, it will recur with greater aggravation in the succeeding paroxysms, — a result which might have been anticipated, for it is very probable that the kind of pains referred to, is not unfrequently more of the character of neuralgia than of inflammation.—Indeed, there are occasionally other trains of symptoms, such as oppression about the chest with dyspnœa, occurring in the course of the hot stage of protracted and confirmed intermittents, in deteriorated constitutions, which are calculated to give, still more strongly, the impression of the existence of serious local disease, but which from the result have evidently not depended on any serious local lesion.

The indication in the management of all these cases is the same, — to prevent the recurrence of the paroxysm by the sufficient administration of quinine, and to improve the general state of the constitution by all the practicable means at our disposal.

It may be objected to these views, that they tend to neglect the complication of local inflammatory action, and the use of the means considered most efficient for its removal. But to urge this objection would be to misapprehend the tenor of my remarks, for it is not intended to call in question the great importance of detecting local inflammatory complications, or throw any doubt on the efficacy of the local detraction of blood for the removal of these, in constitutions not deteriorated by protracted disease.—Still, however, though this principle of treatment is fully admitted as applicable to, and often necessary in the hot stage of suitable cases, it is, I think, a mistake to conclude that on such account the use of quinine during the intermission is less required, for, very generally speaking it will be found that local inflammatory action will be more effectively lessened by preventing the paroxysm of fever (sure to increase that action) than by the use of leeching during its persistence and the neglect of quinine during the intermission.

It is not however to such cases that my preceding remarks were intended to apply, but to those in which the constitution has been deteriorated by long existing disease. In the event of local inflammatory action arising in such states of the constitution, it seems to me very clear that little good can be looked for from the detraction of blood, that on the contrary it is fair to infer that it can have little other effect, than to render the state of the patient more desperate. When general cachexia, and local inflammation of important organs or its sequelæ co-exist, the prognosis is undoubtedly most unfavorable, but it cannot, I think, be to

strongly urged that in such cases the indication of cure is to improve the general health by suitable tonic measures, and to trust to the local injury lessening, as the tone of the constitution becomes more vigorous.

The complication of enlargement of the spleen is so common in cases of obstinate intermittent fever, and has been generally so much the object of special attention in practice, that it would be an omission here not to allude to it ; yet, I do not think that it calls for any great deviation from the general principles of treatment which I have endeavoured to lay down. In cases in which the vigour of the constitution has not been much impaired (and such are not very common), the mode of treatment of enlargement of the spleen by repeated small leechings and the regular exhibition of aperients with sulphate of iron and quinine, as recommended by the late Mr. Twining of Calcutta, is, I think, very applicable ; but I doubt its suitableness in cases, in which the cachexy has proceeded far, for in many of these it has seemed to me that the enlargement of the spleen gives place as the general health improves. In fact, to improve the health by small doses of quinine with half of a grain of sulphate of iron, and a few minims of diluted sulphuric acid thrice daily, to have recourse to pure air, appropriate light nourishing diet, and the use of the compound rhubarb pill as a laxative when required, has seemed the best mode of management.

Whilst advocating so strongly the importance of the use (in their proper place) of antiperiodic remedies, my remarks have been intended exclusively to apply to the sulphate of quinine, and this, because my experience of any other remedy of that class has been very limited indeed.

Quinine has been found in every respect sufficient, for the occurrence of an idiosyncracy calculated to interfere with its use is a very rare event, in *hospital* practice. In the instances in which, for some reason or other, arsenic has been had recourse to as a substitute, I do not recollect any very striking evidence of its efficacy, and certainly not one of an obstinate intermittent intractable to * quinine, but yielding to arsenic.

To prevent misapprehension, it is expedient to specify that the observations which I have made on intermittent fever, as occurring in the General Hospital, are intended to apply to cases in which the paroxysm and intermission are well marked, the tongue during the latter being clean, and the functions performed with tolerable regularity. But, of

* It will of course be understood, that I here state the result of my own experience in a particular field

the intermittent fevers entered in the return, there are many occurring in the autumnal months, in which there is a daily paroxysm of fever, and a daily intermission as regards the frequency of pulse and heat of skin, but during which the tongue continues coated and the functions of the abdominal viscera more or less deranged. As a question of nosology, I am by no means certain that such cases would not be more appropriately classed under the head remittent ; but be that as it may, I am sure that in a practical point they are more conveniently classed with that form, for the treatment in every respect resembles that which it is most expedient to follow in the milder remittent types, — for which reason the remarks which will be made under that head may be held to be equally applicable to the kind of cases to which I have now alluded.

II.

Remittent Fever.

The admissions of remittent fever during the five years amount to 336, being 17.6 per cent of the total admissions from fever. The deaths amount to 48, being 14.2 per cent of the admissions from remittent fever, and 72.7 per cent of the total deaths from fever of all kinds. But the relative proportion of remittents varies with the season. During the half year from the 1st December to the 1st June, remittent fevers are 14.4 per cent ; during the half year from June to December, 20.9 per cent. Nor is the mortality in relation to the prevalence of the disease. During the 1st half year, it is 18. per cent of the admissions ; and during the 2nd, it is 12.4. But the months in which remittent fever is most prevalent, are July, August and September, — nearly the period between the summer solstice and the autumnal equinox : during these months the admissions are 28.7 per cent of the total admissions, and the deaths are 13.9 per cent of the admissions.

The persons affected with remittent fever who resort to the General Hospital are, in a great proportion, seamen, and in some of the worst cases which have occurred the fever has been attributed, and apparently with good reason, to * the malaria of the Dockyard.

* With the view of ascertaining to what extent the crews of ships undergoing repairs in the Dockyard at Bombay, were liable to be affected with fever, I obtained through the kindness of Captain Ross, the Master Attendant, a list of ships of all kinds received into the Dockyard during the period (viz.

In my remarks on the symptoms and treatment of remittent fever

from 1st July 1838 to 1st July 1843), to which these notes on fever have reference, with the date of docking and undocking each ship. The number of ships amounts to 170. This list I compared with the Hospital Register and noted, opposite to the name of each ship, the number of the crew admitted for fever into hospital, during the time the vessel was in dock. The following is the result. Of the steamer Atalanta in dock from the 23rd October 1839 to the 19th February 1840, 9 fever cases; of the private ship Orleana in dock from 13th October to 11th November 1840, 12; of the ship Herefordshire in dock from 13th October to 10th November 1840,10; of the private ship Morley in dock from the 22nd July to the 15th August 1841, 10; of the remaining ships, 3 fever cases were admitted from one; two cases from three; and one case from 10, respectively. From the remaining 152 ships, there were not any admissions of fever during the time they were in the Dockyard.

The fevers from the ships Orleana and Herefordshire, I recollect very distinctly; I am in possession of a memorandum to the effect, that on the 8th November 1840, there were 26 cases of fever in the Hospital, of which there were 22 from these two ships, shewing that the shipping in the Harbour was comparatively free from the disease. The type was chiefly the mild remittent. The admissions from the ship Morley were of similar type; and during the time that this ship was in dock, H. M.'s frigate Endymion was also there, and part of her crew suffered severely from fever of a very malignant type. There were not more than three or four cases admitted into the General Hospital from the Endymion; but the following facts have been extracted by me from official records to which I have been allowed to refer.

The Endymion was in dock from the 19th July to the 19th August 1841. On the 28th July the first cases of fever among the Marines took place; from that date to the 12th August, 27 cases occurred; and to the 23rd, 11 more, and 2 additional cases were subsequently admitted, making altogether 40 Marines affected with fever in one month, all of whom had slept on board in the tour of their duty during the time the Endymion was in dock; and in addition to these 40, there were only two others who slept on board. Thus of 42 who slept on board occasionally, 40 were affected with remittent fever; and to mark the severity of the type, up to the 30th of August, 14 had died, and 10, several of whom were in a doubtful state, remained in Hospital. Whilst such was the extreme suffering of the Marines of the Endymion, whose duty as sentries over stores, led to their exposure to the noxious night air of the Dockyard, the following was the condition of the seamen. From the 24th June, the date of the arrival of the Endymion in Bombay, to the 30th August, there were 95 cases of seamen (blue jackets) of fever; in none of these did the type resemble that of the Marines and none proved fatal; and it is distinctly noted that the carpenters employed during the day upon the repairs of the bottom of the vessel, with one exception, escaped any severe attack, and several of them were not attacked at all.

It is a rule of the Dockyard, that the crews shall not sleep on board whilst the ship is undergoing repairs there; and the statements which have been just made shew the salutary operation of this very necessary regulation.

as observed in the General Hospital, I shall observe the following order : —

1st. Remittent Fever in its most common and most tractable form.

2nd. Congestive Remittent Fever.

3rd. Remittent Fever assuming for some days an almost continued form, and exhibiting in the worst cases well marked typhoid symptoms.

3rd. Remittent Fever complicated with Jaundice.

4th. Certain features occurring in the course of Remittent Fever, which cannot with accuracy be included under any of the above heads.

1st.

Remittent fever in its most common and most tractable form.

The admissions into the General Hospital from the shipping, take place, generally, from one to three or four days after the first attack, and after medical treatment has been followed on board with more or less regularity. The remittent character of the fever is generally well marked, — in some, as regards the heat of skin and frequency of pulse, it amounts almost to an intermission, — and under both circumstances the exacerbation creeps on without any well marked sense of chilliness. The period of febrile accession somewhat varies, — in the greater number the exacerbation is at noon, continuing till evening and then remitting towards bed time. In some, however, there is a well marked remission during the day, and a febrile exacerbation during the night. There is however in these latter cases often good reason for suspecting that this deviation from the more regular course of the disease is, in a measure, the result of treatment, brought about from quinine having been given during the morning remission with the view of preventing the accession at noon, and having been continued till evening, — the effect of which treatment is to delay the period of the febrile accession. In almost all, during the paroxysm there is a good deal of headache with flushed countenance ; in a small proportion, there is vomiting with tenderness at the epigastrium on pressure. In the greater number, the tongue is coated yellow in the centre, in some expanded, in others contracted and pointed with florid edges and tip. The pulse is very generally neither full, firm, nor bounding, but frequent and moderate in strength. In a great many instances the secretions from the bowels are dark, or greenish in colour, and become natural as the tongue cleans.

In regard to the *treatment*, it sometimes happens that the patients have been bled before admission, whether with benefit or not, is, I think,

occasionally very doubtful; but it is not often that general blood-letting is required during their residence in Hospital. —During the paroxysm, in suitable cases, cold affusion followed by frequent tepid sponging may be repeatedly used with great advantage. To relieve the head, from 36 to 60 leeches are very generally required, and it is often a very necessary precaution in the worst cases to shave the head and assiduously to use cold applications.

In cases in which there is tenderness of the epigastrium with thirst, a tongue contracted with florid edges and tip,— all of which conditions may be viewed as decided signs of gastric irritation, — there is necessity for more or less leeching, blisters, effervescing draughts, the avoidance of emetics, antimonials, and drastic purges.

In regard to leeching whether of the head or epigastrium, the period of the paroxysm is that which, it seems to me, should as far as practicable be selected.

There is also a stage of these fevers in which local determinations of blood are very beneficially influenced by the application of blisters; but here, whether used to the nucha or to the epigastrium, — the period of remission or intermission is that which ought to be selected, — so that the impression may be made on the affected organ before the febrile accession comes on and leads to a serious aggravation of the local affection.

The circumstances which make it expedient to have recourse to blistering in preference to leeching, are the facts of the fever being of some days' duration, of leeches having been freely used already, or the state of the pulse or the well known intemperate habits of the patient contra-indicating depletion. The head symptoms which lead to the application of blisters to the nucha are a want of alertness of manner, a tendency to doze or sleep, an unsteady protrusion of the tongue, and the absence of the conditions which justify leeching. There are moreover cases occasionally observed, in which the pulse is feeble and small, and the surface coldish, in which, though the head symptoms are not so well marked as those above noted, a blister to the nucha acts very favourably,—possibly as a stimulant to the whole system. Blisters are required to the epigastrium in cases in which vomiting persists after sufficient leeching, or in which leeching is contra-indicated, — selecting in both instances, as already recommended, the period of remission; for a hot dry skin is always a contra-indication to blistering, and when present, in cases otherwise suitable, it is often useful to apply a few leeches, to watch for the commencement of a remission, and then apply the blister.

In regard to emetics they are often very useful at the commencement of the attack, and ought not to be omitted in cases in which the tongue is foul and expanded, in which there is nausea without vomiting, and in which the epigastrium is without tenderness or much tenseness; but where the epigastrium is tender, the tongue florid at the tip and edges, emetics ought to be avoided. The emetic which I have found the most appropriate is ipecacuanha uncombined, in doses of 25 grains.

During the first two or three days of the attack, it is in general a very important part of the treatment to give a full dose of calomel at bed time, not with the intention of affecting the system, — for this, when practicable, except in peculiar cases, is to be particularly avoided, — but with the view of acting on the abdominal secretions. The best guides to the use of calomel are a foul tongue, vitiated secretions, an abdomen full and resisting, and the action of the vascular system steady and not depressed. Under these conditions a ten grain dose of calomel with a few grains of antimonial powder, succeeded on the following morning by a drachm of compound powder of jalap has, in general, a very beneficial effect; and it is in most cases expedient, if the tongue continues foul and the secretions still vitiated, to repeat a smaller dose of calomel on the one or two succeeding nights.

Where, however, there is much vascular excitement attended with irritability of stomach, the application of leeches to the epigastrium should precede the exhibition of calomel; and where there are signs of gastric irritation,—a tongue coated but with florid edges and tip, uneasiness more or less at the epigastrium, without headache or much pyrexia,— it is often of much advantage to combine the calomel with muriate of morphia.

In regard to the kind of purgative which it is expedient to use, it will, I think, be found that generally the compound powder of jalap is sufficiently powerful, and that in the great majority of cases infusion of senna with sulphate of magnesia is too drastic: for in remittent fever, as generally observed in the General Hospital at Bombay, there is, under the use of much purging, a well marked tendency to the occurrence of dysenteric symptoms. This frequently observed feature of the Bombay endemic ought to be carefully kept in view, and ought to be the more particularly anticipated in those cases in which the tongue is florid at the tip; — in such, the compound powder of jalap must frequently give place to castor oil, and the calomel should, when practicable, be shielded with ipecacuanha and the muriate of morphia, and should as soon as possible be changed for hydrargyrum c. creta.

The exhibition of calomel and purgatives, as now recommended, can seldom be necessary after the third or fourth day of treatment, and is recommended with the view of re-inducing the natural state of the secretions from the liver and bowels, and thus preventing stagnation in the circle of the portal circulation. Perhaps, there is no better practical guide to the advantageous use of calomel and purgatives than the state of the abdomen on pressure, in regard to fulness, or hardness, — taking care not to confound this sign as occurring at the outset of fevers (which is that to which I allude) with the somewhat analogous physical condition resulting in the advanced stages of protracted cases, generally tympanitic in character, and associated with a typhoid state of the system ; or that also somewhat analogous state coming on earlier in cases in which there has been free use of purgatives, also more or less tympanitic in character, and which there is often good reason for attributing to intestinal irritation caused by the already too free exhibition of these remedies. These distinctions are I think well grounded, not difficult to recognize and most important to recollect.

When the abdomen is supple, and without fulness, we may be sure that there is no necessity for the use of purgatives ; and though with this state there should still persist an unnatural condition of the secretions from the bowels, such condition as well as the foulness of tongue which generally accompanies it, is to be remedied by gentle and alterative measures,—for I think there is good reason for believing that in such cases there very often exists a degree of congestion of the capillary vessels of the mucous coat of the intestines, apt, under the irritation of strong purgatives, to be fretted into a state of inflammation and ulceration. It is indeed very true that a somewhat similar state of capillary congestion is not unlikely to result from a decreased exercise of the secretory functions both of the liver and of the mucous lining of the intestines,—so that the middle course is the safe one, tending to the one side or to the other, according to the circumstances of individual cases,—avoiding irritation, and at the same time freeing the secretory capillaries by calling forth the moderate exercise of their secretory action.

After the 1st or 2nd febrile exacerbation a full dose of muriate of morphia may in many cases be exhibited at bed time with much propriety and benefit. Where there is headache with much heat and dryness of skin and vascular excitement, the muriate of morphia is contra-indicated ; but in most cases where there has been good management at the commencement,—adequate leeching, the appropriate use of calomel and

purgatives,—there follows, on the succeeding night, slight pyrexia with restlessness but without headache, a supple abdomen, a tongue still foul but moist, a pulse above natural frequency but soft. In a case of this kind, calomel or blue pill, in a dose proportioned to the state of the tongue and the condition of the secretions in regard to quantity and quality, with a grain of ipecacuanha and one of muriate of morphia, preceded by a foot bath, perhaps by a few leeches to the temples, will generally be found to give a good night's rest; and if followed on the morning by castor oil, or compound powder of jalap, will very frequently be succeeded by a forenoon remission so distinct that quinine may be freely exhibited; and further, it tends to bring about a natural state of the secretions with less risk of gastro-enteric irritation.

But the remedial means, to which as yet these notes have been directed, have had in view the decreasing the state of vascular excitement during the paroxysm, the protecting organs important to life from the risk of harm from undue determinations of blood, and the correction of functions which may chance to be deranged. These are all, doubtless, very important and essential considerations, but they are subservient to the main indication of cure in remittent fever, which is in every respect the same as that which has been insisted upon in regard to intermittents, viz. to take advantage of the earliest well marked remission, or intermission, and adopt means to prevent the recurrence of the febrile paroxysm,—or failing that, to postpone its access, or lessen its severity; and to observe the same course in all subsequent well marked remissions, irrespective of local complications which may require special means for their removal, and to which it is very important that every attention should be given, but which should not be allowed to interfere materially with the steady pursuit of the leading indication of cure as above stated,—and to effect which the sulphate of quinine will generally be found fully sufficient.

If, during the paroxysm of fever, the local symptoms of headache or irritability of stomach have been met by appropriate treatment and the bowels have been freely acted on,—the succeeding remission will generally be found sufficiently well marked to admit of the use of quinine; but, it requires to be given in different forms of combination to meet the peculiarities of different cases. If there be a remission, but the tongue is foul, and the secretions have not been called forth by mercurials, or the bowels freely acted on,—the quinine should be combined with calomel, aloes and ipecacuanha. If, on the contrary, calomel has already been freely exhibited, but the tongue continues foul and the secretions unna-

tural, then let the quinine be given in combination with blue pill. If there be tendency to diarrhœa, the quinine should be combined with hydrargyrum c. creta, muriate of morphia and ipecacuanha. If there be nausea and tendency to vomit, the ipecacuanha should be omitted and the pill or powder of quinine be followed by an effervescing draught.

Generally, three grains of quinine given every 2nd or 3rd hour, for four or five doses, will be found sufficient to check the febrile paroxysm, and, if not to prevent it, at least to postpone its access and lessen its severity.

Where calomel and aloes or blue pill are used, generally, two grains of each and a grain of ipecacuanha with each dose of the quinine, are sufficient; and as the tongue cleans, or in instances in which it has not been foul, it is better to give the quinine in solution,—and in cases such as those of which I now treat, 4 grains, every 2nd or 3rd hour, for four or five doses, will generally suffice for preventing the recurrence of the paroxysm. And on subsequent days the quantity of quinine may be by degrees reduced, and finally continued thrice daily as a tonic in one grain and a half doses, with diluted sulphuric acid. At the same time, when necessary, the secretions from the bowels should be gently, and by degrees, brought to their natural state by means of small doses of blue pill and ipecacuanha, and also of castor oil. Purging should be avoided and there ought to be a cautious return to a generous diet, avoiding equally, on the one hand, a long continuance of one too low, and, on the other, too speedy a return to stimulating food. In some cases it is often useful to combine ℥ii of sulphate of magnesia with the quinine mixture,—when the laxative which has been given has not produced the desired effect, but where a remission is present of which it is desirable to take advantage, but at the same time not prudent to forget that the bowels have not been freely acted on. Effervescing draughts are very useful in the cases with gastric irritability,—they are refreshing and aid the action of the laxatives.

In regard to the average duration of simple remittent fever treated in the manner now recommended, I find, on examining the diaries of sixteen well marked cases successfully treated, that from the commencement of the attack to the perfect cessation of all febrile symptoms, the average period is six days and a half,—of these, two having passed before admission, and four and a half under treatment in hospital. It is not to be understood that after six and a half days the parties were fitted to return to their respective duties, but only that after that time there was no re-

currence of febrile symptoms ; — for it was very generally necessary to continue the exhibition of quinine in decreasing doses for two or three days, and to allow three or four more in order to perfect the convalescence. There can however be no doubt that the more speedily and perfectly the febrile accessions are checked, the more rapid will be the convalescence and the restored efficiency.

2nd.

Congestive Remittent Fever.

I use the phrase congestive in that sense in which it has been understood by late * writers, when applied to fever, viz. that state, which takes place at the outset of the disease, of depressed action of the vascular and nervous systems ; the former characterized by an oppressed and feeble pulse, a coldish and frequently damp skin, and a defective condition of the secretory functions ; the latter by languor and drowsiness. This state is attributed correctly, I believe, to the intensity of the sedative influence of the malarious poison. Such cases prove speedily fatal either in the stage of congestion without a distinct febrile reaction having shewn itself, or reaction takes place and the remittent character of the fever becomes well marked and under careful management may terminate successfully ; or the remissions are badly marked, the fever becomes almost continued in type and typhoid symptoms are early evolved. There is certainly, as remarked by Dr. † Alison, considerable analogy between this form of fever and cholera. The collapse of cholera resembles in many particulars the stage of congestion, and when secondary fever takes place after cholera it is not very unlike the kind of febrile action which characterizes the reaction of this congestive type of fever. There is however this difference, I think, that the former runs a longer course and is more certainly complicated with local subacute inflammation of important organs. I have not observed that the congestive type of remittent fever is more apt to occur at one season than another. It would, however I think, be a fair inference to expect it at the seasons when the malaria is considered most intense, viz. from the summer solstice to the autumnal equinox ; but in fact the instances of congestive fever have not been of so frequent occurrence in the General Hospital, as to permit me to write of them with very much confidence.

* Outlines of Physiology and Pathology by Dr. Alison. p. 485.

† Outlines of Physiology and Pathology, loc. citat.

In regard to the treatment it has seemed to me that it should consist in the judicious external and internal use of stimulants, and of the exhibition of calomel and quinine frequently repeated. The instance in which I witnessed the most marked benefit from this treatment was in a seaman of the name of Crookberry, attacked with fever after exposure in the Dockyard in October 1840;—the skin was coldish and damp, the pulse frequent, compressible and becoming feeble, the manner heavy with drowsiness and wandering delirium, and the secretions from the liver and intestines not free. He continued in this state for 24 hours, not improving under the use of free doses of calomel, a blister to the nucha and the use of wine. Quinine and calomel were then given in two grain doses of each, and were repeated at intervals. The pulse and skin improved under this treatment and then two or three days of febrile exacerbation succeeded, and recovery took place.

Viewing the state of internal congestion of blood, which no doubt exists in these cases, as one of the conditions necessarily resulting from a depressed state of the vital actions of the vascular and nervous systems,— the practice of general blood-letting has not recommended itself to me as a means calculated to effect good. On the contrary, I am disposed to believe that it is likely to aggravate the mischief; and of this effect I have witnessed one instance in a private of the 15th Hussars, to the diary of whose case, however, I have not at present the means of referring.

In regard to the character of the subjects in whom these congestive symptoms are likely to appear, my impression is that they will be found to occur most frequently in persons who have passed the meridian of life and in whom there exists more or less long standing organic disease of the heart, the liver, or the kidneys.

3rd.

Remittent Fever assuming for some days an almost continued form and exhibiting well marked typhoid symptoms.

In years and at seasons when the causes of fever are intense, the endemic remittent of Bombay frequently exhibits a severer character than that which I have described under the first head ; and this greater severity is evinced by the tendency to a well marked remission being less apparent, and by the febrile exacerbation, in the worst cases, assuming an almost continued form for two or three successive days. Cases of this

kind are more difficult to treat, because they frequently do not admit, for several days, of quinine being given in doses sufficiently large to make any great impression on the disease. Still I think that even in cases in which the remission is very imperfect, quinine should be tried, and repeated, or not, in subsequent remissions, according to the effect.

When the evidence is good that this remedy has not acted well, all that can be done is to guide the patient through the paroxysm, protecting important organs from undue determinations of blood, and taking care that this indication is not effected by means which will too much reduce and depress the vital actions of the system, and thereby favor the accession of typhoid symptoms; — then, so soon as the remission becomes better marked, to have recourse to quinine. Though thus fully conceding that cases of remittent fever occur in which, unfortunately, it is not admissible to use quinine very early in the attack, still I am convinced that the more closely such doubtful cases are watched, the more frequent the opportunities of exhibiting quinine will be found to present themselves, and this watchfulness should indeed be enforced from the very commencement of the attack; for I believe that very often in such cases the tendency to a fair remission is more perfect during the two or three first days,—the continued form coming on as a subsequent event. This occasional feature of remittent fever would perfectly justify the opinion, were it disputed on other grounds, that it is a mistake to suppose that quinine only becomes admissible, after several paroxysms have taken place and a course of depletory treatment has been gone through; for it will not unfrequently happen that, by this course, an opportunity of checking the disease will have been lost, only again to recur after the lapse of several days, and then under circumstances comparatively unfavourable.

When remittent fevers of this kind do not prove fatal in the early stage from depression of the nervous system or complication of congestion or inflammation of important organs, (the latter however by no means common as a cause of death at this stage,) but continue beyond the eighth day, — or earlier where the predisposing causes have been intense, — then a new train of symptoms begins to appear. The pulse becomes feeble and more frequent, the tongue dry and brown, the hands tremulous with tendency to subsultus tendinum, and more or less muttering delirium and drowsiness are present;—and no doubt there is associated with these symptoms a loosely coagulating state of the blood. In other words, the remittent fever has assumed a typhoid character, and the signs of

this state are, in a great measure, the same as those which mark a similar change in the character of the continued fever of temperate climates. This is not otherwise than might be anticipated, for why should the signs differ,— what are they but an indication that the vital actions of the nervous and of the vascular system are depressed, and the vital condition of the blood modified, and from the same cause, — the lengthened continuance of febrile excitement ? When this state is present there is much precariousness, the prognosis being more or less unfavourable according to the age of the individual and the evidence of existing inflammatory action in the head, the liver, or mucous membrane of the intestines.

In young and previously healthly subjects, recovery from an unfavourable train of typhoid symptoms, including more or less delirium with well marked tendency to drowsiness, not unfrequently takes place ; and again, on the other hand, a similar train of symptoms may prove fatal and the morbid appearances found after death be very trifling.

When remittent fever has assumed this typhoid character, the only mode of managing it is, I think, to recollect the principles laid down by CULLEN, that "fevers tend to cure themselves" and that the indication of cure is "to obviate the tendency to death." * In fact, all that can be done in such cases is to reduce the increased temperature of the surface by tepid sponging ; to sustain the pulse by light nourishment, wine and other stimulants; to have recourse to the cautious and moderate use of blisters over the organs that may chiefly seem to be affected, (taking care that they are not carried to the degree of increasing the febrile excitement, and recollecting that in the typhoid state of remittent fever, in the very advanced stages, a tendency to run into gangrene is evinced equally as in European typhus,) and to keep the belly open by domestic enemata or very small doses of castor oil, if required.

Such are the resources to which we are restricted when typhoid symptoms co-exist with a state of fever in which the remissions are not marked; but should the remission become distinct,—the dryness and browness of the tongue offer no drawback to the use of quinine. I have seen

* Under these circumstances, to attempt to affect the system with mercury or to hope to control local inflammations by free leeching, or to correct the abdominal secretions by active purgatives, are measures so totally at variance with the indications of cure and so destructive of the faint hope of recovery which it is useful to maintain, that were it not for the indiscriminate manner in which these means have been frequently used, it would be unnecessary to allude to them here.

cases and of one the diary is before me, that of — Penn, ætat. 21, of H. M.s' Ship Endymion, ill with dockyard fever in which after about ten days of fever almost continued, and, in the last days, attended with brown dry tongue and typhoid symptoms, a remission was taken advantage of and quinine was freely used and continued through each succeeding remission with very marked benefit; the exacerbation decreasing and quickly ceasing, and, coincident with this effect, the tongue becoming cleaner and moister,— and that clearly because the dryness of the tongue is but a sequence of the persistence of the febrile action and one of the proofs of diminished secretion. Not only did the tongue in this instance become moist, but for a similar reason the secretions from the bowels became more regular, freer and more natural in appearance.

In the remarks which have been as yet made on the occurrence of typhoid symptoms in the course of remittent fever, I have considered such symptoms in their relation to endemics of a severe and somewhat malignant type resulting from the intensity of the malarious influence. But it is not only under these circumstances that typhoid symptoms present themselves, for they not unfrequently occur when there is no unusual severity in the endemic, or at seasons in which remittent fever is hardly endemial, — and this, in the milder types, in subjects whose constitutions have been deteriorated from some cause or other, (e. g.) insufficient food, lengthened exposure to hot weather, intemperance, depressing passions, or some previous disease; or, these predisposing causes not existing, from medical treatment at the commencement having been neglected, or (and this not the least frequent cause) having been too depressing in its character — too much general blood-letting and too often repeated —too free leeching, too much calomel given in repeated doses without any very definite object in view,—purgatives too drastic and too frequently given, and thereby causing an irritable state of the intestines. When several of these circumstances co-exist (for they are perfectly compatible) with an endemic of severe type, then are combined the conditions most calculated to produce a fever of a highly malignant and typhoid character.

4th.

Remittent Fever complicated with Jaundice.

Though the complication of jaundice with remittent fever is not a frequent occurrence in the Bombay endemic, a season seldom passes without a few instances being met with; and as it is a complication which ren-

ders the prognosis more unfavorable, it is well that we should entertain decided opinions in regard to the mode of managing such cases. According to my experience, the occurrence of jaundice is not a feature of the early stage of remittent fever, but will be found generally to come on about the eighth day and to be a complication of that type which has been considered under the 3rd head, as at a certain period evincing a tendency to assume a form more or less continued. Nor is it to be inferred, from the coming on of jaundice, that the depletory treatment in the early stages has been neglected, for I have witnessed it in cases where there had been more than adequate depletion and no stint of calomel or purgatives.

It does not appear to me that this variety of remittent fever calls for any very particular modification of the treatment. It does not, I think, justify the freer detraction of blood, or a more liberal exhibition of calomel than suffices to fulfil the indications for which these means are had recourse to in cases in which no such complication exists; and, above all, it forms no bar to the free use of quinine when the remission is of that character which, under ordinary circumstances, would justify its exhibition.

5th.

Certain features of Remittent Fever not included under the first three heads, and not peculiar to any of the varieties.

1. The tendency evinced in bad remittents to great collapse towards the conclusion of the febrile paroxysm, and the necessity of extreme caution in directing depletory measures at that stage, have been dwelt on * by Mr. Twining with great earnestness, and I think, judging from my own experience, with so much accuracy that his remarks cannot be too attentively considered.

2nd. Mr. Twining has also with much propriety called attention to those obscure cases of remittent fever, often neglected, in which the febrile paroxysm is badly marked and not attended with symptoms likely to occasion alarm. Cases of this kind have been noticed in the General Hospital at Bombay, chiefly, I think, in the months of June and July, and the insidious manner in which the disease creeps on, is often very striking. There may be very little in the well marked remission to excite alarm; there may throughout the stage of febrile exacerbation, when recognized, be little to attract attention beyond the considerable prostration of strength. In cases of this kind, with each recurring exacerbation, the pulse loses strength, the tongue becomes drier, tremors of the hands are

* Clinical illustrations of the most important Diseases of Bengal. *Passim*

observed, slight wandering of the thoughts, and then delirium, and perhaps, unexpectedly about the tenth or twelfth day or earlier, the exacerbation terminates with extreme collapse and death ; and not unfrequently in such cases the post mortem appearances are inconsiderable.

Cases of this kind call for guarded treatment and much watching, for when there is much prostration increasing from day to day without any evident local cause existing, it may be assumed that a febrile accession takes place some time or other in the 24 hours, and the exact period of its access ought to be ascertained without delay.

3rd. There are occasionally cases observed, chiefly I believe about the month of May, in persons of corpulent habit, in which there are irregular and badly developed febrile accessions, and occasionally fulness, if not pain, of the right hypochondrium with general uncomfortable but not well defined feelings, a coated tongue, fulness and resistance at the epigastrium, scanty watery evacuations, and a difficulty in moving the secretions of the liver and the bowels. Cases of this kind are, I think, occasionally entered under the head of fever, probably not with nosological accuracy, for it seems to be in some instances a train of symptoms depending on congestion and defective secretion from the liver and mucous linings of the intestines, and requires the use of full doses of calomel followed by purgatives.

III.

On the Pathology of Intermittent and Remittent Fever.

Were the evidence less conclusive than it really is of the idiopathic nature of European continued fever, it would surely be a fair inference to conclude that it possesses such character from the analogy of tropical remittent and intermittent fever ; for not only do the worst cases of the former (remittent) not unfrequently prove fatal without leaving after death any appearances which can fairly be called morbid, but we occasionally observe instances of the latter (intermittent), in which local inflammations co-exist, and in which the stage of intermission — the cessation of febrile excitement — takes place equally as if no such local complications were present.

Judging from the symptoms during life and the morbid appearances found after death, the head is the organ most frequently affected with subacute inflammatory action in fever as observed in Bombay ; but it cer-

tainly has not occurred to me to find any very strict relation between the urgency of the symptoms, and the evidence of the existence of inflammation.

In some cases there has been found well marked thickening with opacity of the arachnoid membrane; but it is not in such that the head symptoms have been the most urgent, or the fatal termination the most rapid.

In others there has been more or less vascularity of the pia mater, with more or less serum between the arachnoid membrane and pia mater, and, in some instances, * bullœ of air in the vessels. These appearances have been present, both in cases which have terminated fatally after a few days illness, and in those which have been protracted with typhoid symptoms; and, in many of them, the head symptoms — the low delirium and the tendency to stupor—have been better marked than in those in which subacute arachnitis was undoubted.

Again, it is not unusual, in youthful subjects, for cases in which there have been both delirium and tendency to stupor, to terminate favorably under the use of leeching, blisters, at times mercurials, and quinine during the remissions. The fact that the head symptoms occasionally quickly cease, if the febrile exacerbations be prevented, — and the other fact that, not unfrequently when cases with analogous symptoms prove fatal, there is no very marked evidence of inflammation of the membranes or of the substance of the brain having existed, —leave room to question whether the "tendency to death" is dependent, in the cases adverted to under the 2nd head, on inflammatory action and its sequelæ or on the depressing action on the nervous system of, in the first instance—those quickly fatal—the causes of fever, and in the second instance, the protracted continuance of the febrile excitement, — in fact, one of the phenomena of the typhoid state.

In cases in which death has taken place early in the attack and in which, after death, congestion of the vessels and some serous effusion have been found, — there has been, it may be admitted, more than natural afflux of blood to the head; but it is very doubtful, whether the existence of serous effusion and a moderate vascularity of the mem-

* I am not certain of the exact importance of this sign —bullœ of air in the vessels. It has, I think been little noticed by pathologists and not so far as I am aware related to any particular series of symptoms. Cases will be found here and there in Dr. Bright's medical cases and in Morgagni's works. It has seemed to me to be generally present in cases in which death has taken place suddenly by convulsions and coma, in subjects not previously reduced by disease or other cause.

branes can be held as proof of the same fact, in the more protracted cases. At all events, it is well ascertained that effusion of serum into the head, in greater quantity than is generally observed in those cases of fever, is by no means uncommon in protracted diseases in Bombay (and I presume elsewhere) in which there have been no head symptoms whatever. *

A state of ulceration of the glands of Peyer at the end of the ileum also occurs in cases † of typhoid remittent fever with gastro-enteric symptoms, just as it occurs in European continued fever with typhoid symptoms, and similar local complication. But it is not I think very frequently observed, partly perhaps from the disease not running so long a course as in European typhus, but terminating fatally before these morbid lesions have had time to evolve themselves.

In the statistical observations made at the opening of these notes it has been stated that during the half year from 1st December to 1st June, when the admissions from fever are 15.8 per cent of the total admissions, the deaths are 4.8 per cent of the admissions. Whereas during the half year from the 1st June to the 1st December— that including the autumnal period---when the rate of fever admissions is 31 per cent, the rate of mortality is 3.3 —about one-third less. This statement would seem to be in opposition to that law of endemic and epidemic diseases which exhibits their period of greatest mortality to be coincident with their onset. But to draw an inference of this kind would not be a legitimate deduction from the data before me, because the greater mortality under the head "fever" in the cold months is easily explainable,—a great proportion of the deaths in those months taking place in individuals who have suffered from fever in the autumnal months, and whose constitutions have been deteriorated. When such subjects suffer from a relapse generally of the intermittent type, it is very apt to be complicated in the cold season with dysentery or abscess in the liver; and in such parties, after a few days,

* This fact is very evident in the cases published by me in the 2nd No. of the Society's Transactions and of which there is a general summary at p. 158; nor is it very difficult to account for. With a decreasing mass of the circulating fluid and the necessity of the cavity of the head being always full, the quantity of blood circulating in the head decreases, and as might be anticipated its place is supplied by serum. I hope to be able to extend my remarks on this subject at some future time.

† Case lxxii, Page 63.

the complication becomes the important disease, and the fever quite a secondary consideration. *

IV.

Remarks on some of the chief remedial means which there may not have been opportunity of conveniently considering under the 1st and 2nd heads; e. g. blood-letting; cold affusion; blisters; emetics; the use of calomel and purgatives; of quinine and opiates.

Blood-letting.

It has been stated that, in the cases of remittent fever treated in the General Hospital, the practice of general blood-letting is seldom required, either because the constitutions of the subjects affected render the measure inexpedient, or because the stage, when it can be had recourse to with advantage, has passed. But there can be no question of the utility of blood-letting at the commencement of attacks of fever in persons of robust habit, not long resident in India, in whom the vascular action is strongly excited and steadily maintained; or in whom, with perhaps a less degree of vascular action, there is evidence of considerable determinations of blood to organs important to life,— conditions frequently present in Regiments on their arrival in India, or in fresh drafts of Recruits.

The extent to which depletion should be carried is a point on which the Physician must exercise his discretion in each particular instance, — keeping in view the ultimate advantage of effecting the indication aimed at with as little loss of blood as practicable, and recollecting that the judicious removal of sources of irritation, the adoption of free ventilation, the well timed use of emetics, cold affusion, tepid sponging, antimonials, &c. are all measures of considerable influence in lessening febrile excitement and lowering vascular action; and which, as lessening the necessity of large abstractions of blood, it is of very essential consequence assiduously to have recourse to.

* In a practical point of view, it is of importance to be aware that these fevers leave a very decided proclivity to attacks of dysentery or hepatitis,— the latter apt to run on to abscess—in the months of December and January; and this proclivity is, as might be anticipated, most marked in those persons who have been enfeebled by frequent relapses, or by a course of treatment too reducing.

The practice of repeating the venesection, two or three times, to lessen the vascular action of each succeeding paroxysm of fever, is not only, I think, in general quite unnecessary, but in the majority of instances positively injurious. For with what object is venesection had recourse to in these circumstances ?—surely not in the vain hope of cutting short the disease, for it possesses no such power. It is true that the vascular action of the existing exacerbation may be lessened, and the symptoms depending on that action may be alleviated,—but not only (as I have witnessed in practice and traced in the review of the diaries of cases) does the succeeding paroxysm recur with not less certainty, but, after a certain limit of depletory discipline has been passed, the febrile excitement returns with more severity and not unfrequently with all the local complications aggravated.

When we recollect that the causes of fever act with the greatest readiness and intensity on the debilitated, and that the fever continues to recur from day to day, because its causes do not cease, at the moment of application, to be influential on the human system ; and when we further reflect that the effect of frequently repeated venesection is to enfeeble the constitution, and, when adopted in fever, to reduce the person labouring under the disease to the condition of the very predisposed and that too at a time when the causes of fever are still influential, -- we can be at no loss to understand how frequently repeated blood-letting in the course of fever is an improper proceeding.

In regard to the necessity of controlling the local determinations of blood, which present themselves in each paroxysm, it will be found that depletion by leeching or cupping is in general quite sufficient, and should also be followed within certain limits; for when carried too far it is open to the objections which I have urged against the practice of general blood-letting.

Though fully admitting that remittent fever is frequently complicated with local inflammation, and that, when such is the case, to detect this inflammation and control it by proper treatment are very important considerations ; and though deprecating very much any proceeding calculated to justify neglect in so important a point of practice,—still the fact is not to be concealed, that the worst cases of remittent fever prove fatal independent of all inflammatory action, and that too in cases in which the character of the symptoms might have justified a belief of its existence.

It is this extreme dread of inflammation which has led to every local pain or other symptom which by possibility can be attributed to that

cause, being met by the general or local abstraction of blood; and which practice has resulted from that marked retrogression, since the time of CULLEN, of sound opinion regarding the phenomena of fever,—the denial of its idiopathic character, and the belief of its necessary dependence on inflammation located somewhere.

If the cautions, which I have ventured to urge against indiscriminate blood-letting, are just in circumstances most favorable for the use of that remedy, or even if dissent from such opinions may be fairly entertained,—I believe that all are agreed in regard to the inapplicability of blood-letting in subjects long resident in India or who have suffered from former disease, who have led dissipated lives, or have been exposed to depressing influences of season, climate, domestic circumstances, &c.

The object then of these notes has been to confine the practice of venesection to the commencement of attacks of fever in subjects of phlogistic diathesis, in whom the state of vascular action runs high. If the grounds on which this restriction is advocated be tenable, then, when it is recollected that the period of fatal termination of bad remittents is not in the height of the vascular action, but in the collapse which succeeds it; and that also in cases of fever resulting from a concentrated malaria, or in which a tendency to typhoid symptoms has appeared, the vascular action tends to be depressed; and that of such are the worst remittents — those in which the mortality is greatest — it then follows that little dependence can be placed on the abstraction of blood as a means of lessening much the rate of mortality from remittent fever, and that in the worst cases it is an injurious proceeding.

But it may be urged against these remarks that they are of little practical importance, for blood-letting has been very freely used in the treatment of remittent fever, and that of cases thus treated a great many recover. I do not suggest this very illogical argument with the intention of taking up my own time, or that of the Society in discussing it, but that I may be afforded the opportunity of stating very distinctly, not only the negative disadvantage, but the positive harm which results from following a course of treatment which leads to a tedious convalescence, and leaves the patient reduced and feeble. I have in a note appended to my remarks on the pathology of fever stated the fact of the proclivity of fever patients to attacks of dysentery in the cold months, and this, on a principle applicable to all fevers, is best marked in the most enfeebled. The question of the best mode of treatment of fever is not one which is resolved by the recovery of the patient, but rests on the rapidity of the cure, the character of

the convalescence, and the physical state of the patient when pronounced to be recovered; and these are questions of very grave importance in the treatment of fever, in those bodies of men whose usefulness to the State is dependent on their physical condition.

Cold affusion.

Used in those cases and that stage of the paroxysm in which the skin is dry and steadily above the natural temperature, and the pulse is of good volume, is of very great use by shortening the duration of the paroxysm, lessening the vascular excitement, and, when the head is the organ affected, alleviating the head-ache, and either doing away with the necessity of applying leeches, or of reducing considerably the number required.

The use of this remedial measure is contra-indicated in fever as in other diseases, when there is complication with pectoral affection, and also probably when gastro-enteric symptoms are present, though on this latter point I would not be understood to write with much positiveness, because it is not improbable that, in a climate with a mean temperature of 80, the affusion of water not artificially cooled may not be attended with the same risk, as the use of cold affusion in extra-tropical countries. But still, even if only confined to the cases in which head symptoms are the prominent local complication, it will be useful in a great many instances,—for such form a very considerable proportion of remittents.

When the use of the cold affusion is doubtful or when the suitable period of the disease or the appropriate stage of the paroxysm has passed, tepid sponging may be had recourse to with very good effect whenever the skin is above the natural temperature. And in all cases of remittent fever extending to two or three paroxysms, in which the excitement during the stage of exacerbation is considerable, and in which the head is affected, the scalp should be shaved, and cold applications be assiduously used.

Blisters.

In regard to the kind of cases, and the particular circumstances under which blisters are useful, I have little to add to what has been already stated in different parts of these notes. It is in well marked head symptoms with a decided tendency to stupor, after adequate leeching, that the use of blisters to the nape of the neck; and, if still further required, to the shaven scalp, is often of very great use; and I have seen more recov-

eries from very unfavourable symptoms of this kind, under the use of blisters, than by any other means,—and such instances have chiefly occurred in youthful subjects.

Emetics.

The utility of emetics in the early stages of fever, and the circumstances for which they are chiefly suitable, have been already explained, and I would here chiefly allude to a manner of giving ipecacuanha as an emetic which I first saw practised by Dr. French, now of H. M.'s 49th Regiment, but at the time (1832) to which I allude, in medical charge of the 4th Light Dragoons, which I have on occasions followed, and which I conceive to be well suited for particular cases, — that of combining x or xv. grains of ipecacuanha with grains x. of calomel, and following it, after two or three hours, by a purgative. This combination very generally causes vomiting, and it is assumed that the calomel is retained by being entangled in the mucus of the stomach. The advantage obtained, is, that in cases in which an emetic, a mercurial and a purgative are expedient as initiatory proceedings, there is a gain in point of time, by combining the mercurial with the ipecacuanha. The kind of case for which it seems to me that this treatment is suited, is that in which the tongue is expanded, thickly coated, without floridity of tip or edges, and unattended with tension or tenderness of the epigastrium. But cases exactly answering to this description are not very frequent in Bombay, for more generally in the slighter attacks the tongue is expanded, white and thinly coated, and in these the ipecacuanha alone, as an emetic, followed after some hours at bed time by two or three grains of calomel with antimonial powder or blue pill with ipecacuanha, followed the next morning by a mild purgative, will be found sufficient.

It may be no doubt admitted that in these cases the combination of ipecacuanha and calomel would effect the object in view,—but in the use of calomel it has always seemed to me a sound principle, not to give one grain more than in one's judgment is adequate to carry out the indication of cure, "tuto, cito, et jucunde,"— and not to give it at all, unless to fulfil a distinct indication.

Then there are the other severe cases in which the tongue is more coated but not so expanded, and in which the tip and edges are florid and the epigastrium uneasy on pressure. In these, though a free dose of calomel is in many instances fairly indicated, the emetic is contra-indicated, and the calomel ought very frequently to be preceded by the application, to

the epigastrium, of leeches, a sinapism or blister according to the period of the disease. It is on these grounds, though thinking favourably of the above combination, that I have not often found it necessary to have recourse to it in Bombay.

The treatment of fevers by an emeto-purgative mixture, of tartar emetic and epsom salts in doses frequently repeated, to the causing of free vomiting and purging, is quite unsuited to the treatment of fever as occurring in Bombay, and I am certain could not be generally adopted as a routine system of practice without great hazard. In fact, even in the quotidian or ephemeral fevers of more phlogistic type, as occurring in the Deccan at the commencement of the monsoon, and in a well conditioned body of men, I have witnessed an alarming state of collapse resembling cholera caused by this mode of treatment. It is not disputed that many cases of fever thus managed do very well, but they must be selected with care, for I believe that there never occurs an epidemic of tropical fever, in which there are not many for whom this kind of treatment is not only unsuited, but also hazardous.

On the use of Calomel and other mercurials.

I have already stated that in the early days of remittent fever, when the tongue is coated, the abdominal secretions vitiated and scanty, and the abdomen rather full and resisting,—that then calomel, in doses from ten to four grains variously combined, according to circumstances, given at bed time, and followed on the succeeding morning by a purgative, more or less active according to the peculiarities of individual cases, and repeated according to circumstances, forms an important part of the treatment; and that afterwards, as the abdomen becomes supple, the tongue cleans and the secretions right themselves, blue pill or hydrargyrum c. cret. is quite sufficient to perfect the recovery.

The practice, at one time too common, of exhibiting calomel in doses of four or five grains, three or four times in the course of the day, without any very definite object in view, and continuing it for a succession of days, cannot I think be too strongly discouraged,—for not only is it unnecessary, but in my opinion often positively injurious, and that for the following reasons. In watching the progress of cases thus treated, it is not I think difficult to detect a train of symptoms much more fairly attributable to the treatment than to the disease, because it is in cases thus treated that such is chiefly observed. The symptoms to which I allude are, uneasy feelings sometimes amounting to pain with a sense of

oppression or sinking at the epigastrium, and occasionally griping of the abdomen, for which leeches are not unfrequently applied, and purgatives unnecessarily given. The frequent repetition of the calomel keeps up also a foul state of the tongue, nausea and irritability of stomach, aggravates the febrile excitement, and produces an irritable state of the bowels, marked by frequent watery discharges, The convalescence moreover of cases thus treated is always tedious and frequently complicated with diarrhœa, and clay coloured dejections.

The question of the propriety of making, in all bad cases of remittent fever, strenuous efforts to induce the constitutional effect of mercury, and to insist on ptyalism being caused in proof thereof, would, not many years ago, have formed a prominent feature in any disquisition relating to tropical fevers. But it may, I trust, be assumed, that the necessity for discussing this question has passed away, and that the common belief (in a great measure attributable to the judicious writings of the late Mr. Twining) now is, that an attempt to check febrile excitement, such as evolves itself in tropical remittent fever, by the rapid induction of ptyalism is perfectly futile. And that even were it practicable to induce the full constitutional effect of mercury during the persistence of an active febrile state of the system, there is no evidence to shew that such effect would tend in the least degree to lessen that excitement: — on the contrary, all analogy is opposed to it.

It is very true that the cessation of febrile excitement and the occurrence of ptyalism have frequently been observed as nearly coincident events. But, is there room for doubt that in such cases the evolvement of the mercurial action is the sequence of the cessation of the pyrexial symptoms? — perhaps on no point of practice, is the evidence, if looked for, more open to observation. It is by no means an unusual circumstance in the course of remittent fevers which, in their early stages, have required the exhibition of several full doses of calomel, to observe, after the recurrence of the fever has been prevented by quinine, a slight mercurial action to appear on the 2nd or 3rd day, though not more than a few grains of calomel or blue pill in combination with quinine had been given during these days. Under these circumstances the relation of the events is so apparent and so expressive, that the question of which is antecedent and which sequence is no longer open for argument; and surely in other instances in which the only difference is that there has been no agency employed of acknowledged power to prevent the recurrence of the accession of fever, we ought to recollect the na-

tural tendency of the disease to remit, and after a time to cease,—and certainly ought not to take up the illogical position of attempting to account for the same coincident phenomena by altogether reversing the order of causation.

Though believing that endeavours to induce mercurial action, as a general rule in the treatment of these fevers, is not only inexpedient but very commonly injurious, I am perfectly willing to admit that cases occasionally occur in which, owing to a complication of certain local inflammatory actions, generally of the brain or its membranes, it is of consequence when practicable to affect the system with mercury. Whilst concurring in this view I am however of opinion that in cases of remittent fever exhibiting well marked head symptoms, there is room for the exercise of considerable discrimination, before entering on this course of treatment; for though there are cases characterized by such symptoms, in which at particular stages it is a fair indication of cure to attempt the induction of the mercurial action,—there are also others with similar symptoms, in which, from the co-existence of other conditions, the mercurial action is not only inexpedient but contra-indicated.

This observation, if just, is undoubtedly of much importance, and I shall attempt to explain what has seemed to me the correct principle of distinction.

When in cases of remittent fever, in the first week or so of the attack, in subjects of good habit, head symptoms do not yield to the usual course of treatment, but persist more or less during the remission and give reason to apprehend that subacute meningitis is going on, likely to terminate in effusion of patches of lymph on the surface of the pia mater, or in thickening of the arachnoid membrane — the pulse remaining of moderate volume, the tongue continuing moist, there being no typhoid symptoms present and no indications of much gastro-enteric irritation.—Under these circumstances, generally co-existing in youthful subjects, I should consider it good practice to exhibit repeated small doses of calomel, and use mercurial inunction, with the view of affecting the system,—and this exactly on the principle, on which the mercurial action is thought to be expedient in idiopathic arachnitis, pericarditis, iritis, hepatitis, swelled testicle, &c. —an assumed incompatibility of the mercurial action, and a condition of the blood admitting of the effusion of organizable lymph.

But in the cases in which head symptoms, possibly not differing much from the others in character, come on or persist in association with the usual typhoid signs, and such are generally evolved in instances of more

protracted fever. Under these circumstances, I should anticipate harm from all active attempts to induce the constitutional effect of mercury,—believing that the existing state of the brain is different, — in this the functions failing in association with the functions of other organs—the effect of the action of the remote cause and of the continuance of the febrile excitement,—in the other in consequence of the local changes of structure resulting from the inflammatory action.

The evidences of this difference are the more protracted course of the disease, and the fact that, in the examination after death, there is generally little if any morbid change found. There may indeed be a slightly encreased effusion of serum or a higher vascularity of the membranes, but it is a question how far such appearances, under these circumstances, are to be considered morbid, and, even admitting them to be so, there is no good reason for believing that such changes are likely to be benefited by the induction of mercurial action.

There are also cases with head symptoms—delirium, tendency to drowsiness—coming on early in fevers of a bad type, towards the end of the paroxysm, associated with signs of general collapse dependent on enfeebled nervous energy, which do not call for the use of calomel or other mercurials, but rather stimulants external and internal.

When the head symptoms are such as may fairly be attributed to sub-acute meningitis, but are accompanied with well marked signs of gastro-enteritis—tongue with florid tip and edges, more or less irritability of stomach, diarrhœa with some tension of abdomen—then the case is very perplexing. The state of the mucous membrane contra-indicates the use of calomel without opium, and even with opium, except in very small doses; and the head symptoms contra-indicate the use of opium. The best course to pursue in these cases, is, I think, to treat the gastro-enteritic irritation and the head symptoms, on general principles, and restrict the attempt at mercurialization to the use of hydrargyrum. c. creta and inunction.

I have confined my remarks, on the expediency of inducing mercurial action in remittent fever to cases complicated with meningitis, because it is the most frequent complication which calls for that measure. I can however readily conceive the occurrence of cases of fever, complicated with distinct hepatitis, which might also render it expedient to affect the system with mercury. These are however, judging from my own experience, rare, for I do not allude to cases, by no means uncommon, of a sense of weight and uneasiness of the right side, and the epigastrium, probably dependent on

congestion of the vessels concerned in the secretory function of the liver.

On the use of Purgatives.

Of the necessity of the moderate use of purgatives, more or less active according to the circumstances of particular cases, there is no doubt,—but at the same time, the bad effect of keeping up a constant state of irritation of the bowels by inducing frequent watery dejections is equally apparent.

After the first two or three days, if the secretions dependent directly or indirectly on the portal system have been freely solicited, and the risk of stagnation of the portal circulation, thus in a manner provided against, there can be no necessity for further purging. It will be sufficient that the bowels be moved twice gently in the course of 24 hours,—for the effect of the opposite and too common practice is to irritate the mucous linings; and, in protracted cases, to hurry on and very much aggravate the typhoid symptoms; and in cases of recovery to leave, during the state of convalescence, bowels with difficulty brought to act in a natural way; and lastly to create a most decided proclivity to attacks of dysentery very likely to be excited, if the approach of the cold season finds the patient feeble, reduced, and still in a state of convalescence.

As elsewhere stated, the tendency of a lengthened convalescence, merely from the condition of co-existing debility, always predisposes to inflammatory attacks, when the exciting causes of inflammation are rife. But under the circumstances now adverted to, we have, in addition, those very organs principally enfeebled which of all others are liable to inflammatory attacks in the cold season in Bombay.

There is also room for caution in the use of purgatives in intermittent fevers of long standing, for in one or two instances, I have witnessed the confirmation of the following remark recorded by CULLEN. "But I can say that Sydenham and many other practitioners have observed that we are in danger of bringing back intermittent fevers, if we employ purgative medicines soon after we have stopped them with bark; and we have the same observation in De Haen. * "

On the use of Opiates.

In my remarks on the treatment of remittent fever I have endeavoured to explain the circumstances in which an opiate has seemed to me to act with advantage, and also the precautions which should be kept in view at the time of its exhibition.

* The works of Cullen edited by John Thomson, M. D. Vol. I. p 642

There are however other circumstances in some respects analogous, but in which a full dose of opium cannot be given without much hazard. — I allude to its use after a lengthened period of restlessness, but in which the skin is not steadily warm or is rather coldish, and in which the pulse is frequent and feeble. This state obtains either in cases which have been for some time protracted, or at the end of a paroxysm characterized by much collapse. These symptoms indicate that the nervous influence over the organs of circulation is failing, and the sedative action of a full opiate, under these circumstances, is apt, as I have in one or two instances witnessed, to increase the state of collapse, to mask the degree to which it exists, to hurry on coma and expedite the fatal termination.

Under these circumstances, instead of an opiate, stimulants should be given in the first instance,and it is possible enough that after, under their use, the pulse has for some time been kept steadily raised, and the delirium lessened,—that then occasionally a full opiate may be administered with advantage. But on this particular point, I express myself with diffidence and rather state what seems to me a fair inference than what I have actually observed successfully applied in practice.

On the use of Quinine.

From what has already been stated, in different parts of these notes, on the mode of using this remedy in intermittent and remittent fever,— it will be observed, that the conclusions at which I have arrived differ very little from the rules laid down by * CULLEN : these are :—

1. † "That the bark may be employed with safety at any period of intermittent fevers, providing that, at the same time, there be neither a phlogistic diathesis prevailing in the system, nor any considerable or fixed congestion present in the abdominal viscera.

2. The proper time for exhibiting the bark in intermittent fevers, is during the time of intermission, and where intermissions are to be expected, it is to be abstained from in the time of paroxysms.

3. In remittents though no entire apyrexia occurs, the bark may be given during the remissions ; and it should be given, even though the remissions be inconsiderable, if, from the known nature of the epidemic, intermissions or considerable remissions are not to be so soon expected, and that great danger apprehended from repeated exacerbations.

* Thomson's Edition, Vol. I. p 673.

† This first rule is I have no doubt very accurate when applied to the bark in substance, but I do not think that the phlogistic diathesis or the presence of fixed congestion are, of necessity, contra-indications of the use of quinine. This is a very important and nice point of practice.

4. In the case of genuine intermittents, while a due quantity of bark is to be employed, the exhibition of it ought to be brought as near to the time of accession, as the condition of the patient's stomach will allow.

5. In general, in all cases of intermittents, it is not sufficient that the recurrence of paroxysms be stopped for once by the use of the bark; a relapse is commonly to be expected, and should be prevented by the exhibition of the bark, repeated at proper intervals."

The only remark, additional to those already made, to which I am induced to allude, is, that we are frequently, it is feared, when using quinine in remittent fever, induced to intermit the remedy because a febrile exacerbation may have followed after its use in the first or second remission, under the apprehension that the febrile excitement has been increased by the remedy; and this we are the more inclined to suspect, if there be well marked head symptoms present during the exacerbation. Now in judging thus, we should reflect that the natural tendency of the fever, for a time, is to recur after a remission and that in severe cases there is even a tendency to assume the continued form, that the action of the quinine is to lengthen the period of intermission or remission, or to prevent its recurrence; and consequently that it is a more logical inference, in instances of failure, to assume that had the quinine not been given, the exacerbation would have been more severe and have come on earlier.

In suggesting this explanation it is not my wish to affirm that there may not be cases, apparently suitable, in which the quinine acts unfavourably; but merely to propose a reflection not altogether unimportant in determining the particular instances.

On change of Air, &c.

Of the advantage to be derived by the removal of persons, suffering from confirmed intermittent fever, from the malarious districts in which the disease may have been acquired to a locality more salubrious, there can be no manner of doubt. Of the efficacy of such a measure, the cases admitted into the General Hospital from the river Indus, the Persian Gulf and the late expediton to China, have in many instances afforded very clear evidence,—a fact which, in estimating the success of the hospital treatment, ought to be kept very distinctly in view.

The question however of whether in cases of remittent fever, it is expedient to move the patient before the stage of convalescence has commenced, is quite distinct, and is one, which never arises in hospital practice, and consequently does not fall within the scope of these notes.

This latter circumstance however, would not have restrained me from

entering upon the discussion of a question so very important, had opportunity and time, at present, permitted me to do so with any prospect of advantage. It is indeed of very great consequence that medical opinion on this particular question (as well as on others relating to change of air, and climate) should be more matured than at present. For without at all affirming that circumstances may not occasionally arise in which it may be expedient to move the patient, while actually suffering from serious febrile excitement, I have no hesitation in expressing a very decided conviction, that the measure is often injurious and hazardous, and not unfrequently, it is apprehended, carried into effect in deference to the popular delusion that change of air is a universal panacea suited to all diseases, and all stages of disease.

I

Tabular statement of the admissions and deaths from Fever of all kinds in the European General Hospital at Bombay for the five years, from July 1838 *to July* 1843, *with per centage of deaths on admissions; of admissions on total Hospital admissions; and of deaths on total Hospital deaths, for the same period.*

	1838.		1839.		1840.		1841.		1842.		1843.		Total.		Monthly average of the five years.		
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Deaths on admission.	Admissions on total admission.	Deaths on total deaths.
January	"	"	11	"	16	"	23	2	22	"	33	3	105	5	4.7	19.1	11.5
February	"	"	7	"	10	1	5	"	10	"	23	1	55	2	3.6	13.3	6.2
March	"	"	5	"	15	"	6	1	22	2	26	"	74	3	4.	14.5	9.
April	"	"	17	1	17	"	8	1	31	1	15	2	88	5	5.6	15.1	12.1
May	"	"	37	1	26	"	19	"	37	1	35	1	154	3	1.9	17.9	3.7
June	"	"	56	"	24	1	48	3	47	1	44	1	219	6	2.7	28.4	11.7
July	16	1	28	"	33	1	67	5	75	"	"	"	219	7	3.1	30.5	18.9
August	17	"	50	"	25	1	47	7	40	"	"	"	179	8	4.4	29.3	22.8
September	26	"	28	3	22	1	35	1	30	3	"	"	141	8	5.6	25.8	15.3
October	23	1	66	1	26	"	143	3	60	1	"	"	318	6	1.8	44.	22.2
November	12	"	48	1	43	2	32	"	58	2	"	"	193	5	2,5	28.1	10.6
December	8	"	16	4	14	"	28	"	28	4	"	"	94	8	8.5	15.3	12.1
Total	102	2	369	11	271	7	461	23	460	15	176	8	1829	66	3.5	24.2	12.1
Per centage of deaths on annual admission.	1.9		2.9		2.5		4.9		3.2		4.5						
Per centage of admissions from fever on total Hospital admission.	23.8		27.4		20.1		31.3		22.3		18.7						
Per centage of deaths from fever on total annual Hospital deaths.	6.9		12.9		6.6		20.7		9.6		16.						

2

Tabular statement of admissions and deaths from Intermittent Fever in the European General Hospital at Bombay for the five years, from July 1838 *to July* 1843, *with per centage of deaths on admissions ; of admissions on total admissions from Fever ; of deaths on total deaths from fever, for the same period.*

	1838.		1839.		1840		1841.		1842.		1843.		Total.		Monthly average of five years.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Deaths per cent of admissions.	Admissions per-cent of total fevers.	Deaths per cent of total Fever deaths.	
January	"	"	8	"	12	"	20	"	19	"	31	1	90	1	1.1	85,2	20.	
February	"	"	4	"	7	"	5	"	10	"	22	1	48	1	2.	37,2	50.	
March	"	"	3	"	14	"	6	1	20	1	24	"	67	2	2,9	90,5	66.6	
April	"	"	9	"	12	"	7	"	27	"	14	2	69	2	2.9	78,2	40.	
May	"	"	27	"	17	"	19	"	33	"	34	1	130	1	0.7	84.4	33.3	
June	"	"	54	"	19	"	31	1	45	"	43	"	192	1	0.5	87,2	16.6	
July	10	"	26	"	29	1	13	"	66	"	"	"	144	1	0 6	65.7	14.2	
August	13	"	41	"	22	"	18	"	36	"	"	"	130	"	" "	72.6	" "	
September	16	"	16	1	19	"	29	"	27	1	"	"	107	2	1.8	75,8	25.	
October	18	"	47	"	21	"	140	2	59	1	"	"	285	3	1.	89,6	50.	
November	7	"	40	"	27	"	32	"	54	"	"	"	160	"	" "	82,9	" "	
December	6	"	11	1	12	"	27	"	25	3	"	"	81	4	4.9	85.1	50.	
Total	70	"	286	2	211	1	347	4	421	6	168	5	1503	18	1. 1	81.6	27.2	annual average.
Deaths per cent of annual admissions.	"		0.7		0.4		1.		1.4		2.9							
Admissions per cent of total annual admissions from fever.	68,6		77.2		77.8		75.2		91.5		95.4							
Deaths per cent of total annual deaths from fever.	"		18,1.		14.2		17.3		40.		62.4							

3

Tabular statement of admissions and deaths from Remittent Fever in the European General Hospital at Bombay for the five years, from July 1838 *to July* 1843, *with per centage of deaths on admissions; of admissions on total admissions from Fever; of deaths from total deaths from Fever for the same period.*

	1838.		1839.		1840.		1841.		1842.		1843.		Total.		Monthly average for the five years.			
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Deaths per cent of admissions.	Admissions per cent of total fevers.	Deaths per cent of total deaths from fever.	
January	"	"	3	"	4	"	3	2	3	"	2	2	15	4	26.6	14.1	80.	
February	"	"	"	"	3	1	"	"	"	"	1	"	7	1	14.2	12.7	50.	
March	"	"	2	"			"	"	2	1	2	"	7	1	14.2	9.4	33.3	
April	"	"	7	1	1	"	1	1	4	1	1	"	19	3	15.7	21.5	60.	
May	"	"	10	1	9	"	"	"	4	1	1	"	24	2	8.3	15.5	66.6	
June	"	"	2	"	5	1	17	2	2	1	1	1	27	5	18.5	12.3	83.3	
July	6	1	2	"	4	"	54	5	9	"	"	"	75	6	8.0	34.7	85.7	
August	4	"	9	"	3	1	29	7	4	"	"	"	49	8	16.3	27.3	100.	
September	10	"	12	2	3	1	6	1	3	2	"	"	34	6	17.6	24.1	75.	
October	5	1	19	1	5	"	3	1	1	"	"	"	33	3	9.0	10.3	50.	
November	5	"	8	1	16	2	"	"	4	2	"	"	33	5	15.1	17.	100.	
December	2	"	5	3	2	"	1	"	3	1	"	"	13	4	30.0	13.7	50.	
Total	32	2	83	9	60	6	114	19	39	9	8	3	336	48	14.2	17.6	72.7	annual average.
Deaths per cent of annual admissions.	6.2		10.8		10.		16.6		23.		37.5							
Admissions per cent of total annual admissions of fever.	31.3		22.4		22.1		24.5		8.4		4.5							
Deaths per cent of total annual deaths from fever.	100		81.8		85.7		82.6		60.		37.5							

4

Tabular statement of admissions from Ephemeral Fever in the European General Hospital at Bombay for the five years, from July 1838 *to July* 1843, *with per centage of admissions on admissions from Intermittent Fever.*

	1838.		1839.		1840.		1841.		1842.		1843.		Total.		
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions	Deaths.	Admissions.	Deaths.	Admissions per cent of admissions, from Intermittent Fever.
January	"	"	1	"	7	"	3	"	1	"	1	"	13	"	14.4
February	"	"	"	"	4	"	1	"	"	"	"	"	5	"	10.4
March	"	"	1	"	6	"	"	"	"	"	1	"	8	"	11.9
April	"	"	2	"	5	"	"	"	"	"	2	"	9	"	13.
May	"	"	3	"	12	"	1	"	1	"	4	"	21	"	16.1
June	"	"	10	"	4	"	"	"	9	"	"	"	23	"	11 9
July	1	"	5	"	2	"	"	"	"	"	"	"	8	"	5.5
August	2	"	8	"	3	"	1	"	3	"	"	"	17	"	13.
September	3	"	3	"	5	"	4	"	"	"	"	"	15	"	14.
October	1	"	16	"	4	"	2	"	"	"	"	"	23	"	8.
November	"	"	6	"	2	"	"	"	1	"	"	"	9	"	5.6
December	1	"	1	"	"	"	1	"	5	"	"	"	8	"	9.8
Total	8	"	56	"	54	"	13	"	20	"	8	"	159	"	10.5
Admissions per cent of annual admissions from Intermittent Fever.	11.4		19 5		25.6		3.7		4.7		4.7				

N. B. The object of this table is to correct No. 3. The admissions of Ephemeral Fever are entered under that title in the Hospital Register, but in the official Return, there not being any such title, they are entered under the head Intermittent Fever. Table No. 3, is made out from the official Returns consequently to make it accurate, it should be corrected by deducting from its numbers the numbers in this table. This I have not done in the table itself, in order that it may accord with the hospital records. I have thought it better to supply the data for correction in a separate table.

Article IX.

An enquiry into the evidence which is recorded, in relation to the Influence of the Lunar Changes upon certain forms of Disease By J. Peet, Esq.

Presented November, 1843.

The effect of planetary influence, in modifying the symptoms of various forms of disease, has long attracted the attention of practitioners residing in tropical climates; but I am not aware that any attempt has been made, of late years, to bring the subject in a connected form before the profession.

My object, in the following paper, is to undertake the arrangement of the facts and opinions which have been recorded, with the view of endeavouring to ascertain the amount of confidence which may be safely placed in the accuracy of the doctrine.

From the most remote periods, popular opinion has ascribed to the moon very considerable power upon the human frame, both in a state of health and disease; * thus allusion to its deleterious influence may be found in the sacred writings, and the older authors upon medicine have not unfrequently noticed its supposed effect in modifying certain diseases. †

Hippocrates believed that the "Falling Sickness," and insanity were due to the influence of the moon; and Galen directly affirms that all diseases, and particularly fevers, are subjected to it. It is worthy of remark, that although Hippocrates was the founder of the doctrine of critical days in fevers, he does not appear to have acknowledged the effect of the moon upon these complaints.

* Psalm cxxi.

† In the translation of an old Hindoo work called Susruta, or system of medicine taught by Dharwantari, published at Calcutta in 1835, and referred to in Pereira's Materia Medica; amongst the remedial agents, therein mentioned, are gold, silver, the metals, and the *increase and decrease* of the moon's age.

It is not my intention to trace minutely the history of the subject, anterior to the time when the question was revived by Dr. Mead in the year 1704. It may be, however, mentioned that reference is made to it in the works of many of the writers of the middle centuries. * Few facts were brought forward, and the information is chiefly valuable, in shewing that the subject had excited attention at those periods.

From the close of the 17th century, the question appears to have been but little discussed, until after the Newtonian discovery of universal attraction, at which time Dr. Mead endeavoured to bring it again under notice ; † he was followed by Dr. Darwin, ‡ and in the year 1768, Dr. Lind, for the first time, called attention to it, as a doctrine capable of direct proof in the fevers occurring in tropical countries. §

‖ It must be stated, however, that Dr. Grainger, who served with the army in the Netherlands in the year 1746, had previously mentioned a fact which has been considered of some importance, viz. that 20 men of the Regiment of which he had charge were seized with intermittent fever which was then epidemic, upon the occurrence of a solar eclipse ¶

Dr. Lind's treatise was followed, shortly afterwards, by a publica-

* For a good deal of information connected with the early history of the subject of " Lunar Influence," I am indebted to a Thesis by Dr. Coldstream, written in 1827. Vide Disputatio Medica inauguralis de indole Morborum periodica, utpote sideribus orta. Par Johannes Coldstream, Edinburgi, MDCCCXXVII.

† Mason Good's Study of the Theory and Practice of Medicine, 4th edition, by S. Cooper, pp. 593.

‡ Zoonomia, pp. 376, 455.

§ This was published in the form of an Inaugural Dissertation at Edinburgh. I regret much, that I have not been able to procure it here.

‖ Dr. Jackson on the Fevers of Jamaica, 1791.

¶ It may be here mentioned, that eclipses were at all times supposed to have a particular influence upon the animal economy. Ramazzini states, in describing a fever, which prevailed at Modena, that upon the 21st of January 1693, an eclipse of the moon having occurred, the greater number of the sick died. Dr. Lind also says, that during an eclipse of the sun, Nov. 15th 1762, " there died 800 Europeans, 30,000 blacks in one day ; those who were well, fell sick ; those who were sick, grew worse ; and those who were convalescent, relapsed, under its malignant influence. This is given on the authority of Dr. Goodeve. Vide Appendix to the Transactions of the Medical and Physical Society of Calcutta. vol. viii part ii. pp. cxxiii.

ion of Dr. Balfour's, written expressly upon the influence of the moon in fever. *

In the year 1791 Dr. Jackson examined the subject with some attention, and he has adduced a good many facts in support of the doctrine. The result of his investigations, however, shows a remarkable difference, as to the period of the moon, when the influence is manifested, when compared with the conclusions on this point, arrived at by Dr. Balfour. † This discrepancy will be more particularly referred to hereafter.

Since the publication of Dr. Jackson's work, the subject has been incidentally mentioned by most writers upon tropical diseases. In the year 1827, it was ably and fully discussed in a Thesis by Dr. Coldstream; the early history is here collected with great research, — and I take this opportunity of mentioning, that I have freely availed myself of much of the information it contains.

In arranging the evidence, bearing upon the question, I propose to consider it under two heads viz. direct and indirect influence.

1st.

I Direct Influence.

The most remarkable effects are supposed by Sailors to follow sleeping exposed to the moon's rays, such as nyctalopia, paralysis, and swelling of the face, vertigo, &c. So common, indeed, is this belief that a Sailor is seldom met with, who does not relate instances which he has himself seen.

Few authenticated circumstances connected with this point are, however, recorded, but the few which are to be found, appear to confirm some of these assertions. In the Nautical Magazine for December 1839, a correspondent states, that he has seen the newly littered young perish in a few hours by the mother's side, if exposed to the rays of the full moon. By the same writer, it is mentioned, that fish become rapidly putrid, as well as meat, if left exposed for a short time; and further, he says, "Mariners heedlessly sleeping on deck, are at times quickly affected with night blindness, and the face becomes hideously swollen."

The occurrence of these phenomena is referred to by Mr. Thompson

* A Treatise on the Influence of the Moon in Fevers by Francis Balfour, M. D. Calcutta, 1784. I have not been able to see this work.

† Fevers of Jamaica.

in the Medical Gazette for February 24th 1843, and an attempt is made to explain their appearance in a manner totally independent of any direct, or noxious influence, in the moon's rays.

Mr. Thompson who served in the H. C. Marine Survey Departments on the Bengal establishment, admits the facts, that persons sleeping on the deck of a vessel on clear moonlight nights, are often affected with night blindness, paralysis in some part of the body, and congestion of an internal organ ; but he thinks these effects are due, not to any inherent noxious quality in the rays of the moon, but to the rapid abstraction of heat, which takes place from all exposed bodies on clear moonlight nights, as well as to the increased quantity of moisture, in the form of dew, contained in the atmosphere at those times. The same kind of reasoning is adopted by Mr. Berncastle, in the Medical Gazette of the 31st March 1843. This Gentleman, however, denies the truth of the assertion, that dead animal matter is decomposed by exposure to the moon's rays. He hung up two pieces of meat, one exposed to the direct influence of the moon, the other was kept in the shade. On the following day, both pieces presented precisely the same appearance. This experiment would have been more satisfactory if the kind of night had been mentioned with respect to its being cloudy, or otherwise, the height of the thermometer, and whether dew was deposited.

Before I had seen Mr. Berncastle's paper, I had made an experiment of a similar kind. Upon two successive nights, in July of this year, whilst the vessel lay at Aden, I suspended two pieces of mutton, one exposed to the moon, the other hung in a cloth. On the first occasion, (upon examination the following morning), there was no perceptible difference between the pieces ; on the second, the exposed piece appeared rather tainted. But there was this distinction, the two pieces hung up on the first night, were lean, whilst the exposed piece or the second night, was remarkably fat. The moon was in her 13th and 14th days; the first night was clear, the second cloudy ; there was but little dew ; Thermometer about 85° Fahr. These experiments would appear to confirm Mr. Berncastle's statement ; but I am informed by an intelligent Commander, in the Indian Navy, that in the Persian Gulf he has not unfrequently seen meat destroyed by exposure to the moon, and I am also told by the same officer, that he has observed sailors, with their faces much swollen, after sleeping upon deck in a bright moonlight night. It may be, therefore, that the direct influence of the moon is more marked in certain localities.

With respect to the assertion that fish rapidly decompose under the moon's rays, I think there can be no doubt of its truth. I have frequently seen fish caught, and in fact, have caught them myself upon moonlight nights, which, after being exposed for a few hours in the bottom of the boat, have been found to be entirely unfit for use. *

It is now necessary, to refer to the explanation given by Messrs. Thompson and Berncastle. This explanation is evidently founded upon the assumption, that there is a greater abstraction of heat, and consequently a larger deposit of dew, upon moonlight, than other clear nights; or in other words, that the moon has the power of increasing the radiation of heat from the earth. It will presently appear, how far this hypothesis is supported by facts.

Dr. Howard, who carefully investigated the effect of the moon upon the atmosphere, published the result of an experiment which seemed to prove, that this luminary had the power of radiating heat to the earth. † If the influence deduced from this experiment were correct, it would be altogether opposed to the theory under consideration, as it must necessarily follow, if heat be radiated from the moon, there will be a diminished abstraction from the earth, and from bodies lying on it; and as a consequence, other things being equal, dew will be formed in less quantity, than upon clear nights when the moon is small.

‡ The researches of Professor Daniell, however, tend to show that Dr. Howard was in error, and that, in fact, there is no radiation from the moon. But there is not the slightest allusion in any part of his work, to its possessing the power of increasing the amount of radiation from the earth, which must be proved before we can admit the assertion of the greater formation of dew on moonlight nights. Moreover, common experience would, I think, lead us to believe that dew is deposited in as large a quantity when the nights are dark, as when the moon is at the full, provided, of course, that in each case the sky be equally free from clouds. If, therefore, it be acknowledged, that the abstraction of heat and formation of dew are as copious upon clear nights which are not moonlight, as upon

* In Dr. Lind's work on Hot Climates, there is the following remark, in connexion with this point. "Fish are so apt to corrupt in Tropical Climates, even during the coolness of the night air, that it is a prevalent opinion amongst the fisherman, the moon has a quick and powerful influence in spoiling them." Vide Lind on Hot Climates, pp. 593.

† Daniell's Meteorological Essays and Observations, p. 244.

‡ Oper Cit. pp. 245.

those which are, and that the phenomena which have been mentioned, are only observed when the individuals are exposed to the moon's rays, the obvious conclusion must be that this theory is not sufficient to account for their occurrence. Admitting however, the reverse of all this to be the case, an argument, and not a slight one, might justly be founded upon the impossibility of understanding the "modus operandi" of these causes, in occasioning the effects which have been noticed. The cold produced by a rapid abstraction of heat and by a deposit of aqueous moisture, might easily be imagined to act as a powerful exciting cause of inflammation, fevers, &c. but it would be extremely difficult to conceive how it could operate in giving rise to such affections, as paralysis and night blindness, &c. If this statement were correct, we ought to find numerous instances of these diseases traceable to exposure to cold, and wet weather.

Connected with this division of the subject is the effect of Lunar influence upon vegetable life. * In the periodical before quoted, it is asserted that the Wallaba, a resinous tree resembling mahogany, and common in the woods of Demerara, if cut down in the dark a few days before new moon, is exceedingly durable and so tough that it can only be split with great difficulty ; but if on the other hand, it be felled at full moon, it can be split with the greatest case and its durability is lost. Advantage is taken of this circumstance in the purposes to which the wood is applied.

By the same correspondent it is also stated, that bamboos of the thickness of the arm are remarkable for their durability, and will last ten or eleven years if they be felled when the nights are dark, but the reverse holds good if they are cut down when the moon is at the full. I have also been informed by an intelligent and long resident at the Mauritius, that the old planters there are fully impressed with the reality of the influence of the moon upon vegetable life. He mentioned a curious circumstance, viz. that the old houses, built of precisely the same wood as the more recent ones, are far more durable, and this the planters ascribe to the fact of much greater attention being originally paid to the period of the moon at which the trees were cut down. This statement confirms, to a certain extent, the assertion of the correspondent in the Nautical Magazine.

These circumstances have been related, with the view of showing the direct and marked influence, which the moon exerts, or is supposed to exert, upon animal and vegetable life. It must be admitted, however,

* Nautical Magazine.

that the authenticated instances recorded are very few, and the subject chiefly rests upon general assertions. The opinion as to the danger of sleeping exposed to the rays of the moon in tropical climates, is, nevertheless so common, that it must be allowed some weight, though, it may be, the effects attributed to them are somewhat exaggerated

It is probably impossible to give any plausible explanation of the manner in which the rays of the moon act upon persons exposed to them. Indeed, from the unsatisfactory state in which the science of meteorology continues up to the present time, and especially that part of it which relates to the action of atmospheric changes upon the animal economy, this will not be a matter of surprise.

I will now proceed to consider the second division of the subject, which is more particularly the object of this paper.

2nd.

Indirect Influence.

By the term "Indirect Influence," I would be understood to mean that modification of the atmostphere, depending upon or occurring at the principal lunar changes, to which the origin of some diseases, and certain alterations in the symptoms of others, have been attributed.

Amongst the old writers, the number of diseases thought to be influenced by the phases of the moon is found to be very considerable. I have already alluded to the diseases mentioned by Hippocrates and Galen, and it will now be sufficient to enumerate some of those since observed. Valescus de Taranta, Fernelius, and in the year 1637, Diemerbroeck, ascribed plague to celestial changes, in which opinion they were joined by Ludovicus Mercator. Diemerbroeck who observed the course of the plague for a period of four years, says, "for two days before and after the new and full moon this horrible disease was always aggravated, and at those times it attacked most frequently, and almost all those then seized with it died, and that very quickly."

Bartolinus Tulpius, and Groenvelt noticed the connexion between a disordered state of the bladder and kidneys, and the phases of the moon, and Weffer de Schaffhausen maintained that the occurrence of cerebral diseases, was frequently observable at the periods of new and full moon. Towards the close of the 17th Century, the opinion became very general; thus Floyer in asthma, Morton in fevers, Piso in hysteria, Hoffman in epilepsy, and Musgrove in periodical Hæmorhages, recognised distinct lunar influence.

Professor Ramazzini, who wrote upon a fever which prevailed at "Modena" in the year 1695, states, that "at the full, and particularly the new moon, this fever was aggravated," and this, he says was noticed not only by himself, but also by other professors, and tended not a little towards the prognosis and cure of this disease.

These observations are given upon the authority of Dr. Coldstream's thesis. It must be remembered they were all made in Europe, and I am not aware that the assertions, with respect to the moon's influence upon many of the diseases, have been at all confirmed by modern European Physicians. Indeed, in few works of the present day upon the diseases of temperate climates do we find any allusion to the subject.

The investigations of tropical practitioners have been chiefly directed to the effect of lunar influence in fevers, and more particularly in the intermittent forms of these complaints, and it is principally to this class of diseases that we are to look for any direct proof of its action. Here, however, we shall be disappointed if we expect to find it supported by minute statistical evidence, but so far as the combined opinions and assertions of a number of observers may afford data, from which to draw conclusions, we shall not be deficient in this kind of proof.

1st. For many years the connexion, between the occurrence of paroxysms of fever, and the lunar changes, had been observed in tropical climates, but it was not until the year 1768 that the knowledge of the fact was brought to Europe; or rather, it would be more correct to say, it was not until this period that attempts were made to establish the point by direct proof. For this, we are indebted to Dr. Lind. Many examples of the marked influence of the moon upon fevers were brought forward by this author and great stress was laid upon the extraordinary effects of eclipses, as may be inferred from the following remark.

"We observed the violent and sudden effects of the moon upon the 20th November, at which time an eclipse of the sun occurred. Almost at the same moment, not fewer than eight of the sailors, who were convalescent from fever, were seized with a most violent paroxysm."

Dr. Lind, though at first a very staunch advocate for the doctrine of lunar influence, afterwards changed his opinion, and maintained that the increase of febrile complaints observed about the changes, was due to the high tides which occur at those times, overflowing the low grounds and generating a large quantity of malaria. This explanation has never been admitted, as it is considered, that the influence of the moon has been observed in localities remote from the sea. *

* Jackson on the Fevers of Jamaica.

2nd. Dr. Balfour subsequently paid much attention to the subject. He wrote to the greater number of Collectors and Medical men throughout India, and arranged their facts and opinions, from which and his own observation, he drew these conclusions.

1st. Paroxysms of fever often return or are exacerbated, about the full and new moon.

2nd. The three days which precede, and the three which follow new and full moon, are remarkable for the invasion and relapse of fevers, and the day of the new and the day of the full moon, are the most remarkable of all.

3rd. The days which follow the change, are generally more remarkable than those which precede.

4th. At the new and full moon, the most frequent accessions of fever are between the hours of eight in the morning and three in the afternoon, and also between eight o'clock in the evening and two in the morning.

The days, which are here considered as those in which the perfection of lunar influence is manifested, are not admitted by Dr. Jackson, whose remarks I shall now have to refer to.

3rd. * Dr. Jackson, who examined with much care the influence of the lunar changes upon the fevers occurring in the West Indies, has mentioned the following facts. "His attention (he says) was first drawn to the subject, by observing that 3 or 4 men of a company of soldiers, were frequently attacked with fever upon the same day, whilst there was no recurrence of fever in the Garrison for the ensuing fortnight. This was observed oftener than once, at the time the moon was near the full. Thirty cases of proper remitting fever, were noticed during a year; and it was found that 28 cases occurred upon one of the 7 days preceding new and full moon. In the following year, 28 cases were observed, 22 of which occurred in the periods above mentioned, whilst of the remaining six cases, three occurred on the day of the new moon a few hours after the change had taken place."

These observations apparently refer exclusively to primary attacks of remittent fever and it does not appear, that Dr. Jackson has remarked any febrile exacerbations as occurring at the lunar alternations. It would be of importance, if we could in the statements of other observers, distinguish those remarks which refer to the different forms of febrile complaints. Many of the observations are unfortunately of too general a nature to admit of this distinction.

* Oper. Cit.

4th. * Mr. Annesly states, that he has frequently observed the influence of the full and change of the moon upon fevers, and that he has found it necessary to regulate his practice accordingly, particularly during convalescence from febrile diseases. He does not offer any decided explanation of the occurrence of these modifications but he refers to the atmospherical vicissitudes prevailing at those times as well as to the high tides overflowing the low grounds ; but he admits these explanations are not sufficient.

5th. † Dr. Johnson has also noticed the same fact. "However sceptical (says he) people may be in England with regard to planetary influence in fevers, it is too plainly perceptible within the tropics to admit of a doubt." Dr. Jackson states, that in his own person, when laboring under obstructed liver, he has frequently observed two slight febrile paroxysms in the course of each diurnal revolution, particularly near the full and change.

6th. ‡ Dr. Goodeve, in describing a peculiar form of intermittent fever common in the neighbourhood of Midnapore, makes the following remark in connexion with the influence of the moon. "The accessions of this fever, were evidently influenced by the changes of the moon, and however sceptical many people may be on that point, I am persuaded by close observation of this much ridiculed subject, that the human body is nearly as much controlled by the lunar changes, as the tide and weather ; and in confirmation of this opinion, we find that the periods of new and full moon are those, at which the paroxysms of this malady recur, and that with the utmost regularity" The fever alluded to by Dr. Goodeve, was characterised by a much longer duration of the hot fit, sometimes so long as 48 hours, as well as by its greater severity. There was in addition a peculiar local affection consisting of an œdematous swelling with pain and a burning sensation of the feet and ankles.

7th. § In the Sumbulpore, or Arracan fever, the influence of the lunar changes is said to have been particularly remarked as well as in the cases of fever, which prevailed amongst the crews of the Flotilla, employed on the rivers of Mesopotamia.

* Diseases of India 1841, pp 524.

† Johnson and Martin on Tropical Diseases, pp. 102.

‡ Transactions of the Medical and Physical Society of Calcutta. Vol. vii. part 1st pp. 12.

§ Indian Journal of Medical and Physical Science, old series, vol. 1. p. 143.

8th. * In the Report of the diseases of the Flotilla, drawn up by Mr. Floyd, it is mentioned that " in intermittent fever, quinine often failed, which was attributed to lunar influence, and to the southerly winds, which generally attend the changes of the moon." Mr. Floyd further states, that " fever from this cause was so regular, that it was not uncommon for the men to come for their quinine, a day or two before the expected attack." Again, in another report of a following year in describing an inflammatory form of fever which prevailed in the Flotilla, he says, " We must not disregard the highly electric state of the atmosphere, and the periodical changes of the moon, which would appear to have an indirect effect upon the sanguiferous system, thereby predisposing to fever, as it was mostly present when either one or other, of the above states prevailed." This was a fever without remissions.

I am not aware of the exact parallel of latitude in which these observations were made, as the vessels of the Flotilla were frequently changing their position ; I believe, however, in no case, was it under 34 degrees.

9th. In the replies to certain queries from the Medical Board, respecting the salubrity of some parts of the province of Scinde, the effect of lunar influence is occasionally particularly referred to.

1. † Mr. Jephson, in his Statistical Report of Sukkur states, that " during the hot season, he has observed (in cases of fever and other diseases) the body to be affected in a remarkable degree, during the different phases of the moon, and so often as he has taken notice, the paroxysms of fever near the springs were more violent at mid-day than at any other time."

2. ‡ Mr. Edwards, who also wrote upon the health of Sukkur, says, " at this station the lunar influences are very powerful, and I have generally observed, that to whatever ailments the sufferer may be subject, they are prominently brought out on these occasions."

3. § At Quetta likewise Mr. Leith thus observes " the effect of sol-lunar influence in fevers, is experienced to be as great here as in India."

These observations are incidentally made, in the remarks upon the diseases of these stations.

* Transactions of the Medical and Physical Society of Bombay ; no. iv. pp. 40.

† Oper. Cit. pp. 80.

‡ Oper. Cit. pp. 83.

§ Oper. Cit. pp. 111.

10th. * In the report of H. M. 46th Regiment by Asst. Surgeon Shean, there is a description of a number of cases of fever, which arose from exposure, and in which it is stated that in a few cases the fever returned, after being absent several days, and that this always occurred upon the first full moon after the convalescence.

11. † Dr. Bankier in his work upon cholera, mentions the case of an officer in the Bombay service, who had an attack of fever every month for several years. He states, "the paroxysms were always greatest when the moon came to the full, and gradually decreased towards the last quarter."

12 ‡ At the Mahabuleshwar Hills, which is probably one of the best stations for observing the influence of the moon upon convalescents, Mr. Murray observes, "the patient has usually a return of the fever at each of the two principal lunations, more rarely at one of them."

13. § Dr. Wise in alluding to the attacks of fever and inflammation, which accompany the early stages of elephantiasis, makes the following remark: — "The moon may be observed to have a remarkable influence in producing the paroxysm; in many cases it takes place at the change of the moon, in others at the full, and in some, (more especially at the commencement of the disease) at both change and full moon."

|| The above facts and opinions constitute the greater number of those

* Madras Report of Diseases, between the years 1822 and 28.

† Essay on the origin, progress, and treatment of Cholera. Madras 1835; by Jas. Bankier, M. D. Royal Navy.

‡ Transactions of the Medical and Physical Society, Bombay. Vol. 1 pp. 129 et sequent.

§ Transactions of the Medical and Physical Society of Calcutta, no. viii. part 1st. pp. 161.

|| *Note by the Secretary.* — Since Mr. Peet's paper was drawn up and presented to the Society, the British and Foreign Medical Review for October 1843, has been received. — In this number there is a very interesting report on the epidemic ague or "Fainting Fever of Persia, written by Dr. Charles W. Bell, Physician to Her Majesty's," Mission in Persia, from which the following note is extracted, bearing on the subject of Mr. Peet's communication.

"I am well aware of the ridicule to which I expose myself in thus attributing such marked effects on disease to the changes of the moon; but the evidence before me is so strong as to have removed all my doubt upon the subject; and I see the effects in such a number of patients who suffer from ague every full and change, that I should feel ashamed did the fear of ridicule prevent me stating a fact of which I am so entirely convinced, and which, if true, is so important. Unfortunately, no account is kept of the daily number

which have been recorded in support of the doctrine of the moon's influence in fevers. It has been necessary to give them at some length, in order to adopt as much as possible, the phraseology of the authors, as in any question, which rests so much upon general assertions as that of "lunar influence" the proofs in a great measure depend upon the manner in which the opinions are expressed. I have now to mention some facts which have not yet been brought forward.

14th. At the European General Hospital of this Presidency, the phases of the moon were marked as they occurred upon each case admitted during the year 1839. By the kind permission of Dr. Morehead, I have been allowed to examine these cases. With the exception of intermittent fever, no appearance of lunar influence could be traced in any of the cases, and even in this disease the effect was almost doubtful. Twenty-three cases, comprising the various forms of intermittent, viz. quotidian, tertian, &c. were examined; of this number, there where 14 cases, in which the symptoms did not appear to be at all modified at the springs. The days particularly observed, were the three preceding and following each of the lunar changes, as well as the actual day of the change.

The remaining nine cases appeared to be slightly affected, chiefly by exacerbations occurring in some one of the days above mentioned. In few of these, however, could the exacerbations be traced to a number of successive changes; and of course in giving an opinion when only one or two changes are observed, due allowance must be made, for what may be referred to mere coincidence.

The fever here alluded to consisted of a mild form of intermittent, common at the Presidency; the subjects of it were almost all sailors.

The conclusion drawn at the time, from the careful examination of these cases, was, "that in intermittent fever, a modification of the symptoms, chiefly by exacerbations, does occasionally take place about the periods of the principal lunar alternations, but in many cases it is very slight, and in some inappreciable." These cases, are, however, too few to afford any decided proof, either in favor of, or against, the doctrine of lunar

of deaths in Teheran; if there were, I should be content to rest the settlement of the question upon that alone. The 15th I am satisfied has been by far the most fatal day of the lunar months, corresponding to September, October, November and December 1842, and the 12th and 13th and the 26th and 27th the days upon which a recurrence of fever has most frequently taken place, or upon which the symptoms have most frequently become aggravated."

British and Foreign Medical Review, October 1843 — p. 563.

influence, and, moreover, they only refer to that slight form of fever common amongst sailors. There may possibly be other kinds of fever in which the effect may be more marked, as for example, the fevers prevalent in Guzerat, Scinde, and in other places where the exciting causes of the same form of fever, are equally abundant.

So far the evidence has been more or less favorable, to the idea of lunar agency in fever. It will be seen, however, that it in a great measure consists of opinions formed cursorily from observation, a kind of evidence peculiarly liable to fallacy. It is well known how often opinions are entertained upon some subject, the grounds of which being put to the test of careful examination, and the facts accurately arranged, lead to results, calling for an entirely different view of the matter. I might instance the common idea which at one time prevailed of the moon's influence in cholera. After the publication of Mr. Orton's ingenious though erroneous theory of the production of this disease, ascribing it to some change in the balance of the electricity of the atmosphere, occurring about the new and full moon, much stress was laid upon the alledged fact, and many opinions were given, from observation of the disease, which, if they had been correct, would have left no question, as to the decided part which the moon plays, as an exciting cause of this complaint. When, however, the report of cholera was drawn up by the Madras Medical Board, the point was elaborately investigated, and it appears that so far from there being a greater number of attacks, at the principal lunar changes, there was in fact a less number, leaving a small majority in favor of the quarters or non-morbific periods.

I have thought it necessary to make these remarks, before bringing forward some facts, which are opposed to the idea of lunar agency in certain fevers.

1. * The first attempt to decide the question by statistical proof, was made at the request of Dr. Balfour, by Dr. Stoker of Dublin. He kept records for this purpose, of the cases, admitted into a large fever hospital between July 6th and September 6th, 1817.—276 cases of fever were observed and arranged in a tabular form; upon examination, as Dr. Stoker states, but little coincidence indeed is to be remarked. These Tables were made from cases of a fever which was then epidemic, and which was the result of a prevailing famine, circumstances which Dr. Stoker thinks might have operated to prevent the influence of other

* Transactions of King's and Queen's College of Physicians; Dublin, Vol II, pp. 453.

causes from being observable:—in addition, however, the Tables are not entitled to much consideration as affording an argument against the influence of the moon in tropical countries, as the observations were made in a temperate climate, where I believe the most determined advocates of the doctrine admit the effect to be much less marked.

2. * In a report drawn up by order of the Madras Government, respecting the fever which prevailed in the years 1809-10-11, there is this remark, "With regard to the moon producing relapses of fever we cannot speak with much confidence." Allusion is then made to the assertions of Drs. Balfour and Jackson, and much stress is laid upon the discrepances between these authors. Dr. Joseph Clarke is also quoted by the Committee as a disbeliever in the truth of the doctrine. But by far the strongest circumstance, mentioned in this publication, is a reference to a letter from Mr. Currie, afterwards surgeon to the Residency at Hyderabad, who appears to have stated that he clearly ascertained from a record of attacks and relapses kept in the hospital of the 1st Regiment of Cavalry for two years, that so far from a greater number of attacks or relapses happening at or near the full moon they were actually least common at those times.

If there should be no error in the records from which this statement is taken, it must be acknowledged as being strong negative proof indeed upon the subject of lunar influence.

3. † Mr. Geddes, in his report of the Seringapatam fever, has expressed an opinion that the influence of the moon in fevers is not so decided as is generally believed. By referring to a table, which accompanies this report, it appears from observations made during a period of eleven months, that the greatest number of seizures was on the 15th day of the moon's age; the least number on the 25th day in the proportion of 68 to 31 cases. The 14th only differed by 3 cases, there having been 65 seizures on that day. The next day most obnoxious is the 11th, upon which there were 59 seizures.

Although the greatest number of seizures happened upon the day following the full moon, and exceeds the least number in the proportion of nearly double, yet as Mr. Geddes says, the ratio of "the intermediate days is but small." Mr. Geddes thinks it is no slight argument against the

* Medical, Geographical and Agricultural Report of a Committee appointed by the Madras Government to inquire into the causes of the epidemic fever which prevailed in the years 1809-10-11; drawn up by Dr. Ainslie, Mr. A. Smith, and Dr. M. Christy. London 1816.

† Report of the Seringapatam fever published at Madras in 1827.

idea of lunar influence that such a circumstance has never even suggested itself to the imagination of the natives, and he believes his Table loses its weight from the fact, of sepoys frequently concealing slight attacks of fever in order to prevent being separated from their families by being taken into hospital.

4. For the *following very valuable Table, with remarks, I am indebted to my friend Dr. W. P. Cruickshank, who served with the late expedition in China. In this Table the morbific periods or those at which lunar influence is particularly manifested, are presumed to be the three days preceding, the three following, and the day of each principal lunar change. The number of attacks is, however, given upon all the other days of the moon's age. Of 11 cases of remittent fever, three only happened within the days above mentioned as the morbific periods, the remaining 8 having occurred at other times; this shews a proportion of 8 cases against the supposition of the moon's influence in this form of fever.

Of 76 cases of first attacks of quotidian there is only a maximum of 6 cases at the principal lunar changes, and in the next column, of 36 cases of tertian, the number of attacks is the same in the morbific and non-morbific periods. The total number of first attacks of fever observed, is 123; 62 of which happened near the changes, and 61 at other times, shewing only 1 case, in favor of the full and new moon.

Again, out of 153 relapses noticed, there is only a difference of 5 cases between the attacks which happened in what have been called the morbific periods, and those which occurred at other periods of the moon.

It appears, therefore, as Dr. Cruickshank observes, that "neither in the first attacks, nor relapses, does the moon seem to have exerted any perceptible influence."

There is one circumstance which I ought perhaps to mention here.—In conversation with Dr. Cruickshank, before these Tables were made out, as to his opinion of the effect of the lunar changes upon the fever which prevailed in China, he said, that he had the strongest belief in their marked influence; in fact, that the impression on his mind was so strong, that scarcely any thing could make him doubt it. At my request he kindly put his opinion to the test, by preparing the above Table, from records which he had kept with the view of investigating this subject.

The entirely different view of the subject, which the arrangement of

* *Note by the Secretary.* As being more convenient to the Printer, this table has been placed at the end of the Paper.

facts gave rise to in this instance, from the one which had been drawn from observation, appears to me, to afford a tolerably good illustration of a remark which has been hazarded in a preceding part of this paper, viz. as to the difficulty of forming an accurate opinion on some points, from cursory observation. It is with this view that I have alluded to it, as well as to shew that the Table may be looked upon as perfectly impartial.

It has been already stated, that there is a difference between Drs. Jackson and Balfour as to the period of the moon, at which the modification of the symptoms is most frequently remarked; the former having ascribed the perfection of lunar influence to the 7 days preceding new and full moon, whilst the latter considered the days, which are given in Dr. Cruickshank's Table, as the morbific periods.

With the view of ascertaining whether there is any greater coincidence between the days mentioned by Dr. Jackson and the occurrence of fever, than in the periods of Dr. Balfour, I have prepared from the foregoing Table a list of those cases which occurred upon the 7 days, which preceded new and full moon, contrasting them with those, which happened at the other periods.

Nature of Fever.		Number of cases, occurring in the 7 days, before new moon.	Number of cases, occurring in the 7 days, before full moon.	Number of cases, occurring at other periods.	Total number observed.	Difference in favor of 7 days, before new and full moon.	Difference in favor of other periods.
First attacks,	Remittent	4	6	1	11	10	"
	Quotidian	26	15	35	76	6	"
	Tertian	14	10	12	36	12	"
	Total	44	31	48	123	28	"
Second attacks,	Quotidian	3	10	23	36	"	10
	Tertian	7	7	20	34	"	6
Third attacks,	Quotidian	2	3	7	12	"	2
	Tertian	4	3	14	21	"	7
Fourth attacks,	Quotidian	2	2	4	8	"	"
	Tertian	6	1	7	14	"	"
Fifth attacks,	Quotidian	3	1	1	5	3	"
	Tertian	2	4	3	9	3	"
Sixth attacks,	Quotidian	"	1	1	2	"	"
	Tertian	3	2	"	5	5	"
Seventh attacks,	Quotidian	"	1	1	2	"	"
	Tertian	"	1	2	3	"	1
Eighth attacks,	Quotidian	"	"	"	"	"	"
	Tertian	"	"	1	1	"	1
	Total number of Relapses	32	36	84	152	11	27

From this Table it appears, that, of 123 cases of 1st attacks, 75 happened in the periods referred to by Dr. Jackson, and 48 in the other quarters, leaving a majority of 27 cases in favor of his view.

Of 152 relapses, there are 68 cases occurring in Dr. Jackson's mor-

bific period, and 84 in the quarters, shewing a majority of 16 cases, in favor of the latter periods, or against Dr. Jackson's view.

The proportion of cases of first attacks happening at those times, at which Dr. Jackson considered the influence of the moon to be particularly manifested, shews a much larger number than in the morbific periods of Dr. Balfour, but unfortunately for carrying out the proof, the same remark cannot be applied to the relapses. Taking the whole of the first attacks and relapses together, amounting to 275, there is only a majority of 11 cases in favor of the 7 days preceding new and full moon, or the morbific periods of Dr. Jackson, a proportion by far too small, to admit of any argument being founded upon it.

I have now endeavoured to arrange the various facts and opinions bearing upon the subject of lunar influence in connexion with fever.

When we consider the very general idea which prevails upon this subject, it will appear almost surprising that so few facts are recorded in its favor; as it might be thought there would be no great difficulty (by keeping records of the number of attacks of fever in a corps) in collecting such information as would be sufficient to prove at once, whether there is really that coincidence between the occurrence of this disease and the changes of the moon, which the advocates of the doctrine would lead us to believe. The Hospital records of a Regiment would undoubtedly supply sufficient information with regard to the primary attacks; but it will probably be admitted that a marked line of distinction should be drawn between cases of first, and those slight attacks, to which persons who have long suffered from febrile derangements, are subject. It is not uncommon to observe that persons after recovery from an attack of fever, are often affected with slight recurrence in the form of a few paroxysms, or indeed of a single febrile accession happening at considerable intervals: these paroxysms are frequently considered by the individuals themselves, to occur with great regularity at the springs.—Although we may not be disposed to admit that primary attacks, or even actual relapses of fever, are materially influenced by the lunar changes, it may yet be quite possible, that there is truth in the opinion that these slight cases of simply febrile exacerbations happen most frequently at those times.

In Dr. Cruickshank's Table, I am inclined to believe, that what are there called relapses, refer to distinct secondary attacks of fever, and not to those slighter instances which I have endeavoured to distinguish from actual attacks.

The records of an Hospital are not calculated to furnish much information in relation to this slight form of fever, or rather sequela of fever, as in the intervals between the paroxysms the health may be tolerably good; at all events, not sufficiently impaired to induce the patients to present themselves at a public establishment; and in the case of sepoys, the remark of Mr. Geddes (formerly alluded to) may be correct, viz. their disinclination unless seriously ill, to apply for relief, on account of being obliged to leave their homes and families.

The same remark is also applicable to sailors, as there is frequently a wish on their part to avoid the sick list, from their supply of spirits, in the event of their reporting themselves sick, being always stopped; and it may, therefore, be not improbable that even amongst the cases of the ship, in which Dr. Cruickshank served, slight febrile paroxysms might have occurred at the lunar changes without being brought to his notice.

It is, I think, these single paroxysms or slight attacks of fever, (to which I have alluded) that have given rise so generally, amongst unprofessional persons, to the belief of the great influence of the changes of the moon. The opinions of medical men, however, with respect to the increased severity of epidemics observable at certain periods of the moon, cannot be subjected to this kind of explanation; but I may remark as a singular circumstance, that in the few instances, where the subject of lunar influence has been put to the test of actual proof, by the collection of a number of cases both of primary attacks and relapses, in the face of the positive assertions in its favor, the result has been either altogether opposed to the view generally taken, or the relation between the attacks and changes has been so slight, that an impartial person would be almost compelled to doubt its existence.

Not less extraordinary is the discrepancy between two authors, who evidently studied the point with much care, as to the period of the moon's age, when the influence is manifested; I refer to the assertions of Drs. Jackson and Balfour, before mentioned. In whatever way we may be disposed to account for this difference, it must necessarily throw a doubt upon the conclusions drawn from the cases submitted to the observation of these writers, and operate to a certain extent as an argument, against the theory of lunar influence.

With regard to the effect of lunar agency upon other diseases, unconnected with fever, I have already adverted to the opinion which at one time prevailed as to the influence of the moon in the production of cholera. So many supposed facts in illustration of its marked effect upon

this disease were published, that when the report of cholera was drawn up by the Madras Medical Board, the point was considered of sufficient importance to entitle it to a careful investigation. Accordingly cases were selected from different official records ; * from which it appears that out of 7,664 cases observed, 3,725 were admitted during the quarters of the new and full moon, considered the morbific periods, and 3,939, during the first and last quarters, or non-morbific periods, which leaves a difference of 214 cases in favor of the latter periods. The inference deduced was, that the individual cases of cholera, were not affected by the influence of the moon ; the increased number occurring in the last quarter, was referred to the unsettled weather, which prevails at that time, operating as an occasional or remote cause. An attempt was also made at the same time to ascertain, whether the epidemic invasions of cholera could be traced to the principal lunar changes. In the quarters of the new and full moon there were 57 beginnings of epidemics ; in the first and last quarters 67 beginnings, shewing a difference of 10 in favor of the latter or non-morbific periods.

2. In some cases of periodical hæmorrhage, it has been believed that an increased discharge often happens at the lunar changes.

† Mr. O'Shaughnessy has given an account of a case of fibro-cartilaginous tumor, in which he says, "The bleeding which occurred from the swelling was more particularly marked, about the period of the full moon, and it was more abundant and more certain to return at that time." Dr. Coldstream has likewise mentioned that he believes he has not unfrequently traced an aggravation of hæmorrhoidal discharges, as well as of cases of neuralgia, to the periods of the principal lunar changes.

3. ‡ Mr. Haines in his report of the 2nd Battalion of Madras Artillery states, that exposure to night air sometimes causes spasmodic affections of the chest and abdomen which appear to him to be more frequent at the lunar changes, and particularly where there has been electric fluid observed from the presence of lightning.

* Report of the Epidemic Cholera drawn up by the Madras Medical Board, page xciii.

† India Journal of Medical and Physical Science. Vol. iii. p. 66.

‡ Madras Reports.

Doctor Cruickshank's Table.

	Full Moon.							New Moon.							Total in full and new moon.	First Quarter.							Last Quarter.							Total in first and last quarters	Difference in favor of full and new.	Difference in favor of first and last quarters.
	3 days before.	2 days.	1 day.	Full.	1 day after.	2 days.	3 and 4 days.	3 days before.	2 days.	1 day.	New.	1 day after.	2 days.	3 days.		3 days before.	2 days.	1 day.	1st quarter.	1 day after.	2 days.	3 days	3 days before.	2 days.	1 day.	Last quarter.	1 day after.	2 days	3 days.			
First attack, Remittent	"	1	"	"	"	"	"	1	1	"	"	"	"	"	3	"	"	"	1	1	"	"	1	"	"	1	"	"	"	8	"	5
Quotidian	2	1	2	4	3	1	"	3	2	4	6	2	1	2	41	"	3	2	2	1	4	3	1	2	"	5	6	2	4	35	6	"
Tertian	1	1	1	"	1	2	"	1	4	5	2	"	"	"	18	3	1	"	"	2	"	5	2	"	"	1	2	"	1	18	"	"
Total of first attacks	3	3	3	4	4	3	8	5	7	9	8	2	1	2	62	3	4	2	3	4	4	11	4	2	1	8	7	3	5	61	1	"
Second attack, Quotidian	2	"	1	3	"	"	3	4	"	3	"	1	1	"	18	1	1	3	1	3	1	2	"	"	"	"	"	3	3	18	"	"
Tertian	"	1	1	"	1	1	1	1	"	2	2	5	3	1	19	"	2	"	"	1	1	3	2	1	1	3	1	"	"	15	4	"
Third attack, Quotidian	1	"	"	2	"	"	"	"	1	1	1	2	"	"	8	1	"	1	1	1	"	"	"	"	"	"	"	4	"	4	4	"
Tertian	"	"	"	"	1	1	2	"	1	1	2	2	"	"	9	2	1	1	"	2	1	"	2	"	"	2	1	"	"	12	"	3
Fourth attack, Quotidian	"	1	"	1	1	"	"	"	"	"	"	"	"	"	3	"	1	"	"	1	"	"	"	"	"	1	1	"	1	5	"	2
Tertian	"	"	1	1	1	"	1	"	"	1	1	"	1	1	8	"	"	1	"	1	"	"	"	"	"	1	2	2	1	6	2	"
Remittent	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1	"	"	"	"	"	"	1	"	1
Fifth attack, Quotidian	"	1	"	"	"	"	"	2	"	"	"	"	"	"	3	"	1	"	"	"	"	"	"	"	"	"	"	1	"	2	1	"
Tertian	"	"	1	"	"	"	"	"	"	"	2	1	"	"	4	"	"	"	1	"	1	"	"	"	"	"	1	1	"	5	"	1
Sixth attack, Quotidian	"	"	"	"	"	"	"	"	"	"	1	"	"	"	1	"	"	"	"	"	1	"	"	"	"	"	"	"	"	"	1	"	"
Tertian	"	"	"	"	"	"	"	1	"	"	"	"	"	"	1	"	"	"	"	1	"	1	"	"	"	"	2	"	"	"	4	"	3
Seventh attack, Quotidian	1	"	"	"	"	"	"	"	"	"	"	1	"	"	2	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2	"
Tertian	"	"	"	2	"	"	"	"	"	"	"	"	"	"	2	"	"	"	"	1	"	"	"	"	"	"	"	"	"	"	1	1	"
Eighth attack, Quotidian	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
Tertian	"	"	"	"	"	"	"	"	"	"	"	"	1	1	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1	"
Total of Relapses	4	3	4	9	4	2	7	8	3	8	9	12	5	3	79	4	6	6	3	10	5	7	5	1	2	8	5	7	3	74	5	"
Grand Total	7	6	7	13	8	5	15	13	8	17	17	14	6	5	141	7	10	8	6	14	9	18	9	3	3	18	12	10		135	6	"

The accompanying Table represents the periods of attack in Remittent and Quotidian and Tertian intermittent fevers observed on board the Honorable Company's Steam Frigate Sesostris, from the beginning of August 1842, when fever first made its appearance in the English fleet in China till the end of February 1843. 276 cases chiefly of Europeans were observed, in all 123 first attacks and 153 relapses, but in neither does it appear that the change of the moon exerted any perceptible influence. 65 cases of 1st attack and 5 relapses occurred in August when the ship was lying in the Yang tse Kiang river off Nankin about 300 miles inland, along a flat and swampy shore, the weather sultry and a daily average range of Thermometer from 78 to 84. On the 3rd of September she put to sea and with the exception of touching at a few ports, remained out all the month during which 54 cases of 1st attack and 45 relapses occurred. On the 11th October she arrived in Bombay harbour and during the remainder of that month, and of the period of observation, remained for the most part there. From the excessive heat during the first two months most of the crew slept on deck under awnings.

APPENDIX.

APPENDIX.

1.

Description of the operation of Lithotomy as performed by a Native Hakeem. Extracted from the Annual Report of the Sick of the 22d Regiment, N. I. for the year 1842. By A. Arnott, M. D.

Presented by the Medical Board, May 1843.

Having had no occasion to perform any capital surgical operation myself, it may not, pro hac vice, be entirely out of place here, though not pertaining to my official charge, to describe an operation for Lithotomy performed in my presence by a Native Hakeem on a boy about 11 years of age, who had for some time suffered under the severest symptoms of stone in the bladder. No preparatory course of medicine that I am aware of having been gone through, the first object was to ascertain the existence of the stone and to bring it down into the neck of the bladder. The Hakeem's Assistant took the boy in his arms and jolted him up and down, allowing him to light on his feet with some violence. He then placed him on the lap of a friend seated on the end of a cot with his arms put under the lower end of the thighs; and his hands held to secure him in this position, which sufficiently exposed the perineum, the limbs being kept separate as much as possible. The Assistant compressed the abdomen from above downwards; and the operator, having introduced the fore and middle fingers of his left hand, previously well oiled, into the rectum, seized the stone and made it protrude as much as possible in the left side of the perineum, where, with a knife, the blade of which was a little broader than that of a common penknife, he made an incision proportioned to the size of the prominence formed by the stone, from a little behind the scrotum downwards between the anus and tuberosity of the ischium. He then made several deep incisions, some of which I believe were transverse, to make a sufficient opening for the exit of the stone; and to extract it he used an iron hook, an instrument that gave him more power and took up less room than a pair of forceps. Notwithstanding the enlargement of the inner wound two or three times, considerable force and violence were required, and these he did not hesitate to employ, his principal consideration appearing to be the extraction at all hazards.

The calculus was of the mulberry species, hard and compact, of a spherical form, with an uneven surface presenting prominent pointed tubercles, and weighed upwards of ʒvi. There was not much blood lost, and after the operation the thighs of the patient were brought together, and he was allowed to rest for some time. I understand that subsequently he was daily put into a warm bath, and when I again saw him the wound was closed and

the urine passed by the urethra. The fee of the Hakeem, who is a Mussulman and has operated by his own account in hundreds of cases, and who also professes to cure hæmorrhoids, was 10 rupees and rations for ten days for himself and his assistant.

There is nothing new or strange in this operation, for it was practised upwards of 2000 years ago. It was the similarity in the most minute particulars of the operation described by Celsus that struck my attention and makes it worthy of notice. The position of the patient was the same "reductisque ejus cruribus, ipsum, quoque jubet, manibus ad suos poplites datis, eos quam maxime possit, attrahere." The instruments were exactly the "scalpellum" and "uncus," and the after treatment corresponded even to the warm bath "Deinde interpositis duabus horis, in solium is aquæ calidæ resupinus demittendus est," &c. In short every step in the operation performed by this Hakeem, was described by Celsus.

Surgery was in a much more advanced state in Egypt and most likely also in India in very early times than it is at the present day; and from the stationary state of the arts and sciences in India, it is more likely that this operation has been known and practised from a very remote antiquity, than that it was introduced by British Surgeons who do not practise "cutting on the gripe," the knowledge of it having been derived from the Egyptians who imparted it also to the Greeks and Romans. Approved of and followed so many ages, it must have some undeniable advantages, and indeed it was preferred by the late Mr. Allan of Edinburgh, for boys under 14, which is the very age beyond which Celsus did not think it applicable, "in eo corpore, quod jam novem annos, nondum quatuor decim excessit" It is certainly the only one that Hakeems can perform, little or no knowledge of anatomy being required.

Calculus is by no means so rare in India, as, on the authority of Dr. Scott, it is stated to be by European writers. A man was brought in to me from a village in the neighbourhood with a stone impacted in the urethra, about an inch from the orifice, which I succeeded in breaking and extracting, and I have often removed stones from the urethra of children. This Hakeem states that in many districts of Candeish there is not a village he goes into where he does not find a case for operation. It is rare in Sepoys because their period of life is not that which predisposes them to it. A diet containing very little azote may not be favourable to the production of the lithic acid diathesis; and still a tendency to form phosphate and oxalate of lime deposits may be owing to the use of vegetable and farinaceous food.

Malligaum;
1st January, 1843.

2

Extract from the Annual Report of the 1*st Troop H. A. Horse Artillery for* 1842. By R. Baxter, Esq, relating to the march of the Troop from Candahar to Cabool, and thence to the Punjab.

Presented by the Medical Board, May 1843.

General Observations. The Troop has been on field service in Scinde,

and Affghanistan during the whole year, and has, since the beginning of March, been constantly marching, the men exposed to great variations of temperature, frequently bad water, and considerable fatigue and privation; the admissions consequently have been more numerous in the present, than during the past year, viz. 175 for 1841, and 233 for 1842. The deaths in hospital the same as last year, viz. 7 during the early part of the year. Whilst the Troop was stationed at Dadur, several cases of the Scinde ulcer occurred, and with the exception of the case of Gunner Miller who was obliged to be left behind at Quetta, as unfit to proceed on service, the cases, though some of them severe, were not protracted. The other diseases generally occurring in Scinde during this period were of a slight character; the admissions were most numerous during the months of May, June, and July, when the Troop was at and in the neighbourhood of Candahar, when the heat was excessive from 110°, to 115°, in the tents during the day. The prevailing diseases during the time were Intermittent Fever, Dysentery, and Diarrhœa, but they were of a mild type and soon yielded to the medicines employed. At this time a severe Erysipelas raged in the Force, causing the deaths of many men both Natives and Europeans; four very severe cases occurred in the Troop, of the head, and face, and one of the leg, and reduced the men to an almost hopeless state, but I am happy to say they all eventually recovered. After the march of the Troop towards Cabul, the weather soon became much cooler and Fever almost entirely disappeared from the Troop; the Dysentery and Diarrhœa, however, still continued and have been the prevailing diseases during the remainder of the year. After entering the Punjab the Corps generally became very sickly; the Troop was not affected in the way of a great increase of the admissions, but those already suffering from Dysentery became much worse; this may perhaps be explained, by the constant marching; for instance, 22 days with but one halt, the weather at the same time being in the morning very cold and damp, and towards the end of the month there was heavy rain. It will be seen by the foregoing remarks that the prevailing diseases during the past year were Fever, Dysentery and Diarrhœa, these diseases making more than half the number of admissions, viz. Dysentery and Diarrhœa 74; Fever 47. The Fever cases with one or two exceptions all occurring at, or in the neighbourhood of Candahar.

3.

A case of Intermittent Fever complicated with Aphonia, also Observations on the case taken from the half-yearly reports of 2nd Troop Horse Artillery, dated 1st July 1836 and 1st January 1837. By A. Arnott M. D. Surgeon.

Presented September, 1843.

I forward herewith a case of this fever selected on account of a remarkable symptom attending its course, which rendered it more than usually interesting. I think it may fairly be considered a case of complicated or masked Intermittent, with predominant affection of the head or the nerves of the larynx and other vocal organs. In the first instance the aphonia preceded the regu-

lar paroxysm only one hour; there was some impediment in the speech, two or three days previous to the next attack in which this symptom shewed itself; and in the third the aphonia itself no doubt constituted the paroxysm in a masked form, for there was neither heat of skin nor preceding rigor, and it came on one day after the full moon at the hour the paroxysms used to begin. The pulse, which in the course of the afternoon was 110, fell next morning to 80, proving that an intermission had taken place, and 5 or 6 days afterwards there was a regular paroxysm after which his speech gradually improved. I had some idea at first that the quinine, the patient had taken in previous attacks, might have had something to do in exciting congestion or inflammatory action in the brain, because he had complained of giddiness which he attributed to its use; however, that which was given on its being found that the paroxysms did not yield to arsenic, had a beneficial effect. In the attack in April, I left it off on account of the continued dilatation of the pupils, and the paroxysms ceased without it. He had an attack in June in which there was no impediment in the speech but the pupils were dilated. In October, having unduly exposed himself to the sun and also probably taken too much liquor, he was again attacked with aphonia. His pulse as formerly was very quick while the inability to speak continued; and next day, when his speech returned, it was reduced to the natural standard.

John Garvey, Gunner 2nd Troop H. B. admitted at Ahmedabad 20th January, (2 days after new moon) 1836, age about 22 years.

Was suddenly seized yesterday with speechlessness without any other symptom of paralysis or apoplexy. There was no loss of consciousness, feeling or voluntary motion, and no distortion of the face. His pulse and the pupils of his eyes were natural, but the conjunctiva was rather vascular; his breathing was hurried which seemed to be occasioned more by his efforts to speak than any thing else, and it soon became regular and calm. He pointed to his mouth and stomach, which led to a supposition that he had swallowed some poisonous substance, and the stomach was consequently evacuated by inserting the tube of the stomach pump down the œsophagus, whereby vomiting was induced, nothing however was thrown up, but the food he had eaten a short time before.

He was bled to 39 ounces which induced syncope, and he fainted again when sitting on the close stool.

The following enema was administered ℞ decoct. oryzæ ℥xii. olei terebinth. ℥i. magnes. sulph. ℥ii. m. solve, and he got 10 grs. of calomel and 10 of extract colocynth c. by which he was purged two or three times very freely. His head was shaved and a cold lotion applied to it. After these means were resorted to, he spoke a word or two once or twice, and then the cold stage of the fever, he has lately been subject to, came on, and during the night he was restless and feverish, with much thirst.

In November last at Poona, he suffered severely under remittent fever which assumed an irregular double tertian type, the exacerbations being daily, and commencing generally some time after noon. On account of inflammatory congestion in the head and chest venesection was freely and repeatedly used, assisted by purgatives and mercury carried to the extent of affecting the constitution, and followed up on the subsidence of the febrile action by quinine.

The venesection was performed in the first instance during the cold stage which it cut short, and most of the succeeding exacerbations had no cold stage. The cold affusion was also tried in his case during the hot fit. Neither of these modes of treatment were attended with any peculiar advantage. Has been in hospital three times on the march for fever, which was of a distinct intermittent form and treated chiefly by quinine and purgatives.

This morning he does not attempt to speak, pupils much dilated; pulse 92; he has also some cough; tongue dry; has the free use of all his limbs; very little vascularity of conjunctiva.

Repet. Venesectio et sumat calomel gr. v. c. pulv. jalap ʒss. Contin. lotio frigid. capit.

January. 21st. — He was bled to 24 ounces and during the bleeding he said, with an effort in reply to a question put to him, "better" and "a little," and he spoke the same words this morning. He had a paroxysm of fever again yesterday, which went through all the stages regularly. Pulse, this morning, 110; tongue pretty clean; pupils dilated; the medicine not having operated at mid-day he got an ounce of salts and afterwards he had several stools, no headach R. magnes. sulph. ʒi. aq. lbi. spirit œther nitros ʒss. m. sumat ʒii. secund. quaque hora. Contin. lotio frigid. capit.

22nd—Several stools from the medicine; had fever again yesterday, it came on at 2 o'clock; the pupils continued much dilated all day, but they are nearly of the natural size this morning, and he speaks pretty well; pulse 82.

Contin. medic. ut heri. Liq. arsenic. m. v. singul. dos. addit. et Lotio frigid. capit.

23rd — No fever yesterday, slept very well last night, and he thinks he is much better on that account; speaks now very distinctly; pupils rather dilated still, and countenance somewhat sallow; tongue clean; pulse 88. Contin. medic. ut heri.

24th — No fever yesterday; speech improving; pupils still rather dilated; feels very weak; pulse 76; tongue clean; 2 or 3 stools yesterday; lips a little sore inside, he thinks from the medicine. Contin. medicam.

25th—Had a paroxysm of fever yesterday which lasted from 2 till 9 o'clock; tongue clean; bowels open from medicine two or three times; pupils look more natural. Contin. medic. sec. q q. hora.

26th — Fever again yesterday; pretty well to day; pulse 88; tongue clean; some griping yesterday, he thinks from medicine; bowels open; pupils pretty natural now, and speech distinct. Contin. med. et apud hor 1 habeat quin. sulph. gr. iss.

Oonjah, 27th — Fever again yesterday, bowels open; tongue clean; pulse 100; slept badly. Omitt. medic, antea prescript. Habeat quin. sulph. gr. iss sec. q q. hora. febre non accedent.

Sidhpoor, 28th — Had fever almost all day yesterday, is pretty well this morning and has a better appetite; pulse 68; tongue clean. He got 8 grs. of extract. colocynth. c. and of calomel last night which operated two or three times; had only one dose of quinine yesterday. Contin. quin. sulph. sec. q q. hora.

Meytah, 29th — Got the quinine regularly every two hours and no fever came on; feels pretty well this morning; pupils and speech now natural; looks rather sallow; tongue clean. Contin. quin. sulph. ut heri.

30th — Fever yesterday ; pretty well this morning ; tongue clean ; pulse 76. Contin. quin. sulph.

Deesa, 31st — No fever yesterday, pulse 78 ; tongue clean. Contin. quin. sulph.

Deesa, *February* 1st —No fever yesterday, pulse 68 ; tongue clean. Contin. quin. sulph.

2nd — No return of fever ; appetite good ; pulse 66 ; tongue clean. Contin. quin. sulph.

10th — Has taken the quinine in daily decreasing quantities since last report and has had no return of fever. Discharged.

15th — Two days before new moon. *Vespere.* This morning about 9 o'clock he was seized with a cold fit which lasted till 12, when the hot fit came on and continued till 3, he has been sweating since, complains of no particular pain ; tongue clean ; bowels open. Sumat extract. colocynth. c. gr. viii. calomel. gr. iv. in form. pilul.

16 — Bowels moved three times ; he feels pretty well this morning ; tongue clean ; pulse 60. ℞ quin. sulph. gr. iss. acid. sulph. dil. m. ii. aq. menth. m. ft haust. secunda quaque hora summend.

21st — Has continued to take the quinine since last report and has had no return of fever. Discharged.

March 14th — Three days before new moon. *Vespere.* This morning he complained that he had had some impediment in his speech for two or three days. His bowels had been costive and his pulse was 90 ;—he was directed to take 5 grs. of calomel then and 4 ozs. of infus. sennæ with salts at 12 o'clock : a paroxysm of fever came on about 11 and continued till 4, the medicine has operated 5 times and he has no headache or pain any where except in his loins.

15th — Feels better this morning ; pulse 76 ; tongue clean ; bowels not open in night. Repetr. Haust. purgant. et habeat quin. sulph. gr. iss. omni hora febre absente.

16th — The medicine operated very frequently ; the paroxysm came on about 1 o'clock yesterday and was not so severe as the day before ; pulse 80. Contin. pilul. quin. sulph.

17th — Felt hot but had no regular paroxysm yesterday. Contin. quin. sulph.

18th — No fever yesterday ; bowels regular ; tongue clean ; speech perfectly distinct and without any impediment. Contin. quin. sulph.

21st — No return of fever and speech is quite distinct. Discharged.

April 4th, Two days after full moon. Was seized again yesterday with aphonia about 3 p. m. and at 6 his pulse was about 110 and his pupils dilated, but there was no heat of skin or preceding rigor. He was bled from the arm to about 24 ounces, and he got 10 grs. of c. ext. of colocynth and 6 of calomel which have operated four times ; pulse 80. ℞ quin. sulph. gr. iss. aq. ʒi. acid sulph. dil. m. ii m fit. haust. secund. q q. hora. capiend.

5th — Does not speak, but does not appear to make sufficient effort to do so, and while his arm was bleeding he did say some words ; pupils more natural in size this morning : no paroxysm of fever yesterday ; pulse 84 ; tongue clean ; 28 leeches were applied to each temple last night as his pupils were then much dilated. Contin. quin. sulph. Sumat haust. purgant. ʒiv. c. vin. ant. ℥i.

6th — Yesterday evening, his pupils being considerably dilated and pulse quick, 20 more leeches were applied to each temple and followed by a blister to back of head and neck which has risen, and he says some words to day ; pulse 100; pupils still dilated ; bowels freely acted on yesterday by the medicine. Repet. haust. purgant. ℥iv. Omitt. quin. sulph.

7th — Utters a few words this morning ; pulse 88 ; medicine operated five times. Sumat olei. ricini ℥i.

8th — Last quarter of moon. Does not speak so well this morning ; pulse 120 ; pupils were very much dilated yesterday evening, and the leeches were repeated in the same number as before ; pupils pretty natural this morning. There are no paralytic symptoms except the aphonia ; medicine operated ten times yesterday. Applic. lotio frigid. capit.

9th — Had a paroxysm of fever which continued the greater part of the day, feels better this morning ; pulse 104 ; speaks a little better ; bowels very open yesterday ; pupils natural. Contin. lotio capit.

10th — No fever yesterday. Arm, at the place he was bled, inflamed and painful ; a poultice has been applied. Eyes natural this morning ; the pupils not being dilated ; pulse 90 ; speaks a little with difficulty. Sumat haust. purgant. ℥iv. Contin. lotio capit. et applic. etiam brachio.

11th — No fever, pupils pretty natural, but they were a good deal dilated yesterday evening ; pulse 86 ; and he speaks much better, medicine operated. Contin. lotio capit. et brachio.

12th — Speaks very distinctly this morning ; pulse upwards of 150 ; pupils natural ; appetite good ; arm well. Contin. lotio capit.

13th — Improving ; pulse 76 ; pupils rather dilated ; bowels open ; tongue clean.

14th — Continues better.

15th — Continues quite well.

17th — Discharged.

He had another attack of aphonia on 27th October, which was brought on by exposure to the sun. It was removed by bleeding and purgatives, during the attack his pulse was 108 ; but there was no heat of skin ; next day it fell to 60 and his speech became distinct.

4.

A Notice of the state of health of the Prisoners in the Konkan Subsidiary Jail at Trombay. Communicated in a letter addressed to the Superintending Surgeon. By J. D. Campbell, Esq.

Presented by the Medical Board, April, 1843.

In reporting on the present state of the Prisoners in the Konkan Subsidiary Jail, I beg leave to premise that no material change has taken place, either in the character or frequency of disease since my last report. I shall therefore take this opportunity of laying before you a statement of a disease which has prevailed and generally proved fatal since January, and to which the mortali-

ty in the Jail may be specially attributed. I cannot enter into a lengthened detail, within the limits of this letter, and, indeed, I have not yet arranged my notes on the subject, which I am daily collecting with the intention of submitting them to the Medical Board on the removal of this camp. The disease to which I allude bears a remarkable resemblance to that described by Doctors Hardy, Prichard, and Bourchier, in the Transactions of the Medical and Physical Society of Bombay; and there is also a case detailed by C. Morehead, Esq. M. D. in his Pathology of the Diseases of Bombay, which appears identical with some of those fatal cases, the diaries of which have been already forwarded. The morbid symptoms are chiefly languor, with œdema of the feet and legs, generally accompained by diarrhœa, dropsy, sometimes extending over the whole body. The face at the same time undergoes a remarkable change, circumscribed pallor overspreads it, the lips become bloodless, and the expression idiotic. Death is generally very sudden. Although the disease is very unmanageable, I have found considerable benefit derived from the following formula with occasional mercurial alteratives:—

Ri. Acet. Scillæ ℥i.
Tinct. Digitalis m. xv.
Infus. Rhei. ℥i.
Infus. Gentian Co. ℥ii
Potass Nitrat. ℈i.
Tinct Cardamom. Co.
Tinct. Columbæ ãã ℥i.

Repeated three or four times a day.

2nd. The nominal return of sick in hospital is necessarily much increased by the frequency of slight accidents, such as bruises and wounds of the feet and hands, and in connection with this subject I may mention that lacerated wounds of the heel are very common and in many instances are volumtarily incurred by the men in order to avoid their daily tasks, these wounds being attended with little or no pain.

3rd. I find a great tendency to pulmonary disease among the prisoners, — pleurisy and pleuro-pneumonia having several times occurred: but Phthisis is the most common and makes rapid progress. I have found tubercular disease to a greater or less extent in nearly every case in which I have performed a post mortem examination.

4th. In conclusion, I beg to inform you that the water (so often blamed as a cause of disease here) is of very good quality as is evident from the continued good health of the Sepoys, and I can only account for the feeble state of the prisoners when once attacked by disease, by attributing it to the depressing influence of the imprisonment, morally, while their inattention to cleanliness is a most probable physical cause.

Trombay:
21st *March*, 1843.

5.

Tabular statement of the total admissions and deaths in the European General Hospital at Bombay, for the five years from July 1838, *to July* 1843 *with per centage of deaths on admissions, for the same period.* By C. Morehead, M. D.

Presented, December 1843.

	1838.		1839.		1840.		1841.		1842.		1843.		Total.		Monthly average.
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Per-centage of deaths on admissions.
January	"	"	79	8	76	10	128	12	108	2	158	11	549	43	7.6
February	"	"	46	3	69	9	81	8	96	5	119	7	411	32	7.7
March	"	"	56	6	104	9	89	7	118	6	139	5	506	33	6.5
April	"	"	89	7	131	16	89	5	141	8	131	5	581	41	7.
May	"	"	129	17	148	13	129	17	224	21	230	12	860	80	9.3
June	"	"	122	3	154	10	145	7	206	21	154	10	781	51	6.6
July	100	5	118	5	143	6	148	12	209	9	"	"	718	37	5.1
August	72	5	137	6	94	4	126	13	178	7	"	"	607	35	5.7
September	66	5	114	9	93	10	108	9	165	19	"	"	546	52	9 5
October	50	5	165	5	101	1	224	8	182	8	"	"	722	27	3.7
November	71	4	191	8	137	10	80	9	206	16	"	"	685	47	6.8
December	68	5	97	15	96	8	124	4	228	34	"	"	613	66	10.7
Total	427	29	1343	92	1346	106	1471	111	2061	156	931	50	7579	544	7.1
Deaths per-cent of annual admissions.	6.7		6.8		7.8		7.5		7.5		5.3				

Taking the average of the five years the deaths per cent, of admissions for the half year from December to May inclusive are..... 6.2

Do. for half year from May to November inclusive..... 8.1

The object of this table is to complete the data on which are grounded the calculations given in my remarks on Delirium Tremens, and notes on Remittent and Intermittent Fever.

The inmates of the European General Hospital are supplied from the following classes, viz Military details of the Garrison and Naval details of the Dockyard and Steam department; the poor fixed resident European community; seamen from H. M.'s Navy, the Indian Navy and Merchant service. The last class, that of seamen, generally constitutes about two thirds of the inmates. During the last two years the daily number in hospital has ranged from about 70 to 120; and this is a considerable increase on what used formerly to be the case, consequent on additions made to the Government establishments, and to the increased shipping which resorts to the port.

6.

The late Dr. John Grant Malcolmson, M. D.; F. R. S.; F. G. S.

Though Dr. Malcolmson's connection with this Society took place at a time when he had ceased to be an active member of the Medical Profession, though his name has been already celebrated in association with another Society and the pursuit of other branches of natural science, and though the recollection of his generous character and his social virtues will long endear his memory to the community of this place,—it still devolves on the Medical Society to recollect that but a few years have elapsed, since the career which Dr. Malcolmson had commenced, gave promise, had it been continued, that as a zealous and philosophic cultivator of Medical Science in India, he would soon not have been second to any of his predecessors or contemporaries.

Dr. Malcolmson entered the Madras Medical Service in the year 1823, and for about ten years was actively employed in different parts of that Presidency, and while in medical charge of European and Native troops, had ample opportunity of collecting the numerous facts and acquiring the professional experience which appear in his published writings.

In the year 1833 the Madras Government offered a prize of Rs. 500 for the best dissertation on each of the two following subjects.

1. On the disease called "Beriberi."

2. On Rheumatism and the Neuralgic affection occasionally a sequela of it, which is termed among Natives "Burning of the feet."

Dr. Malcolmson was the successful competitor for both prizes, and his Essays were published by the Madras Government in the year 1835.

The subject of this notice was then appointed Secretary to the Madras Medical Board, and after discharging the duties of that office with much ability for about a year and a half, he returned to England in 1836, on sick certificate.

During his residence in England the following Essays on subjects connected with medicine were published by Dr. Malcolmson:—

1. A letter to the Right Honorable Sir Henry Hardinge, K. C. B., M. P., on the effects of solitary confinement on the health of Soldiers in warm climates.

2. Clinical Remarks on some cases of liver abscess, presenting externally; Edinburgh Medical and Surgical Journal for October 1839.

3. On a peculiar symptom occurring in some cases of enlarged liver; Medico-chirurgical Transactions. Vol, xxi. London 1838.

4. A Review of three works on Bronchocele in the British and Foreign Medical Review for July 1839.

Dr. Malcolmson retired from the Madras Medical Service in the year 1840 and became a partner in the house of Messrs. Forbes & Co., at Bombay. In February 1844 he proceeded on a tour with the view of exploring the Geology of parts of Guzerat and Khandeish, and while thus engaged he was attacked with hepatitis and died at Dhoolia on the 23rd of March.

The following proceedings of the Bombay Branch of the Royal Asiatic Society, mark the sense entertained by that Society of the high and varied qualities of their late Secretary.

Bombay Branch of the Royal Asiatic Society.

At a Monthly Meeting of the Society held in the Library Rooms on Wednesday the 10th April 1844.

The following Resolutions were then proposed to the meeting by the Chairman Dr. James Burnes, K. H. seconded by Dr. Bird, and carried unanimously : —

1. That the Bombay Branch of the Royal Asiatic Society do enter on their records an expression of deep and heartfelt regret for the loss of their Secretary, the late J. G. Malcolmson Esq. M. D.; F. R. S.; F. G. S.; a Gentleman whose high integrity of character, generosity, warmth of heart, and zeal in the promotion of science, and wide and varied acquirements, obtained for him the esteem and respect of all who knew him, and especially of the members of this Society, with whom he was in constant and gratifying intercourse.

2. That, with the view of perpetuating a record of those feelings towards the memory of that eminent individual, the Society do accord, yearly, a gold medal, to be designated "The Malcolmson Medal" to the author of the best paper presented to the Society on the Natural History and Literature of India, points in which the late lamented Secretary evinced the deepest Interest.

3. That a fund be raised for the above purpose by subscription among the members of the Society.

QUARTERLY PROCEEDINGS

OF THE

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

Proceedings from 1st January to 31st March, 1843.

MEMBERS ELECTED.

Ordinary.

D. Grierson, Esq. Bombay Establishment; H. Giraud, Esq. Assistant Surgeon, Bombay Establishment, elected in accordance with regulation No. 7.

Communications Presented.

1. Letters from H. S. Fleming, Esq. Madras Establishment; M. T. Kays, Esq. Surgeon: and C. Cramond, Esq. Assistant Surgeon, Bombay Establishment, signifying their wish to withdraw from the Society.

2. A letter from H. Franklin, Esq., Deputy Inspector General of Her Majesty's Hospitals, Bombay, forwarding a series of cases from Staff Surgeon R. H. A. Hunter, late Assistant Surgeon of the 2nd Queens Royal Regiment of Foot.

3. A letter from J. Murray, Esq., Surgeon to the Convalescent Station, Mahabuleshwur Hills, to the address of the Superintending Surgeon, Presidency Division, forwarding remarks on a residence at Panchgunnee during last monsoon, by the Rev. Allen Graves of the American Mahratta Mission at that station; presented by the Medical Board.

4. Observations on the good and bad effects of Calomel in some of the Diseases of India; by J. Murray, Esq. Surgeon.

5. Monthly Register of Sick on board the Honorable Company's armed Steamer Nitocris, for the months of November and December 1842, by G. Q. Lynch, Esq., presented by the Medical Board.

Proceedings from 1st April to 30th June 1843

MEMBERS ELECTED.

Ordinary.

S. Osborn, Esq. J. Turner, F. Broughton, Esq. and T. B. Johnstone,

Esq. Assistant Surgeons, Bombay Establishment, elected in accordance with Regulation, No. 7.

Dr. McLennan, has been elected President of the Society in succession to Dr. Kennedy.

Dr. Graham and Dr. Brown, have been elected members of the Committee of Management, in succession to Dr. Kennedy and Mr. Glen

With reference to Regulation No. 19, and Circular dated 23rd January, 1843, the following Gentlemen, whose subscriptions are more than three years in arrears, have ceased to be members of the Society. C. F. Collier, Esq. J. P. Malcolmson, Esq., and J. J. Atkinson, Esq.

Communications Presented.

1. A letter from F. S. Cahill, Esq. requesting that his name may be withdrawn from the list of members.

2. Letters from E. Barlow, M. D., of Bath and J. Floyd, Esq. Surgeon late in medical charge of the Hon'ble Company's Flotilla on the rivers of Mesopotamia, acknowledging the receipt of the 4th Number of the Society's Transactions.

3. A letter from J. G. Crosse, Esq. of Norwich, acknowledging the receipt of a copy of the Society's Transactions.

4. Contributions to Vegetable Embryology, from observations on the origin and development of the Embryo, in Tropœolum Majus; by H. Giraud, M. D. Edin. F. B. S. E. Ext. Mem: Med Soc. Edin. &c. &.

5. A report on the present state of the Subsidiary Jail Prisoners, Trombay; by J. D. Campbell, Esq.; presented by the Medical Board.

6. Medical Report on the Kingdom of Shoa; by R. Kirk, Esq; presented by the Medical Board.

7. Annual Report of the Sick in Hospital of the 10th Regiment, N. I., for 1842; by John Scott, Esq.; presented by the Medical Board.

8. The Annual Hospital Report of the 18th Regiment, N. I., for 1842; by F. S. Arnott, Esq.; presented by the Medical Board.

9. Annual Report of the sick of the 22nd Regiment, N. I., for the year 1842; by A. Arnott, Esq.; presented by the Medical Board.

10 Annual Report of the 1st Troop Horse Artillery for 1842; by R. Baxter, Esq.; presented by the Medical Board.

11. Annual Report of the Native General Hospital for the year 1842; by A. Graham, Esq.; presented by the Medical Board.

12. Remarks on the use of Iodine in solution for the radical cure of Hydrocele; by J. W. Winchester, Esq.

13. Extract of a Report by A. Gibson, Esq. Superintendent of the Government Botanical Garden, on the growth of Senna, Henbane, and other medicinal plants; presented by the Medical Board.

Proceedings from 1st July to 31st December, 1843.

MEMBERS ELECTED.

Ordinary.

E. W. Stone, Esq. Her Majesty's 14th Light Dragoons

Communications Presented.

1. A letter from the Royal College of Surgeons in London, acknowledging the receipt of 4 Numbers of the Society's Transactions.

2. Remarks on the Treatment of Cholera by J. D. Campbell, Esq.; presented by the Medical Board.

3. Cases illustrative of the Pathology of the diseases of Bombay. Part II; by C. Morehead M. D.

4. Observations on the Case of Gunner J. Garvey taken from the half yearly Reports of 2nd Troop Horse Artillery, dated 1st July 1836 and 1st January 1837; by A. Arnott, Esq. Surgeon.

5. Could the Natives of a temperate climate colonize and increase in a tropical country and vice versa? by Arthur S. Thomson, M. D. Assistant Surgeon 14th Light Dragoons.

6. Remarks on the Treatment and Pathology of Delirium Tremens, as observed in the European General Hospital at Bombay during the five years from July 1838 to July 1843; by C. Morehead, M. D.

7. Example of the beneficial influence of change of climate on the health of Europeans in India, by Arthur S. Thomson, M. D. Assistant Surgeon 14th Light Dragoons.

8. An inquiry into the evidence which is recorded in relation to the influence of the lunar changes upon certain forms of disease; by J. Peet, Esq.

9. Register of the Pluviometer at Bombay for the months of May, June, July, August, September, and October 1843, by G. Noton, Esq.

10. Notes on the Treatment and Pathology of Intermittent and Remittent fever, as observed in the European General Hospital at Bombay during the five years from July 1838 to July 1843; by C. Morehead, M. D.

COMMITTEE OF MANAGEMENT. FOR 1844.

President.

J. McLENNAN, ESQ.

Members.

J. G. MALCOLMSON, ESQ. — J. BURNES, K. H.
A. GRAHAM, ESQ. — R. BROWN, M. D.

Secretary.

C. MOREHEAD, M. D.

LIST OF DONATIONS FOR THE LIBRARY.

By the Editor.

2 The India Journal of Medical and Physical Science from January to December 1843.

By the Author.

1. Essays on the Philosophy of Vitality as contradistinguished from Chemical and Mechanical Philosophy, and on the modus operandi of remedial agents; by M. Paine, A. M., M. D., Professor, &c.
2. Memoir of the late James Hope, M. D., Physician to St. George's Hospital, &c. &c. by Mrs. Hope.

By the Asiatic Society of Bombay.

Journal of the Bombay Branch Royal Asiatic Society, No. IV.

By the Medical Board of Bombay.

1. Report on the Medical Topography and Statistics of the Centre Division of the Madras Army, published by the Medical Board of Madras.
2. Report on the Medical Topography and Statistics of the Presidency Division of the Madras Army, including Fort St. George and its dependencies, within the limits of the Supreme Court, published by the Medical Board of Madras.
3. A Practical Memoir on the History and Treatment of the Diseases of the Camel, with instructions for preserving its efficiency as an Animal of transport and a general outline of its Anatomy, also an account of the Medicines used in the cure of its diseases; drawn up by W. Gilchrist, Esq., Assistant Surgeon, public cattle depot, Hoonsoor.

By M. L. Bouton, Esq. Secretary to the Society of Natural History in Mauritius.

A copy of the Annual Report of the Society of Natural History in Mauritius.

LIST OF MEMBERS

OF THE

MEDICAL AND PHYSICAL SOCIETY OF BOMBAY.

ORDINARY MEMBERS BOMBAY PRESIDENCY.

The asterisk (*) marks those members who are absent on furlough or sick leave.

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Arnott, A., M. D., *Surgeon.*
Arnott, F. S., M. D., *Assistant Surgeon.*

Babington, W. F., Esq., *Assistant Surgeon.*
Barrington, W. B., L.L. D., *Surgeon.*
* Behan, R. J., Esq., *Surgeon.*
Black, C., M. D., *Assistant Surgeon.*
Bowie, W., M. D., *Assistant Surgeon.*
Boyd, J., Esq., *Surgeon.*
Boyrenson, F. A., M. D., *Assistant Surgeon.*
Braikenridge, W., Esq., *Assistant Surgeon.*
Bremner, B. A., M. D., *Surgeon in Bombay.*
Broughton, T., Esq., *Assistant Surgeon.*
Brown, R., M. D., *Surgeon.*
Burn, A., M. D., *Assistant Surgeon.*
Burnes, J., K. H., M. D., *Surgeon.*

Campbell, J. D., Esq., *Assistant Surgeon.*
Campbell, W., Esq., *Assistant Surgeon.*
* Carnegie, D. A., M. D., *Assistant Surgeon.*
Carter, H. J., Esq., *Assistant Surgeon.*
Craig, J. Esq., *Assistant Surgeon.*

Davidson, R. H., M. D., *Assistant Surgeon.*
Demock, W. R., Esq., *Assistant Surgeon.*
Doig, J., Esq., *Surgeon.*
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Ellis, F., Esq., *Assistant Surgeon.*

Fogerty, W. K., Esq., *Surgeon in Bombay.*
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* Frith, R., M. D., *Surgeon.*

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Giraud, H., Esq., *Assistant Surgeon.*
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Graham, A., Esq., *Surgeon.*
Grierson, D., Esq., *Assistant Surgeon.*

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Inglis, J., M. D., *Staff Surgeon.*
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Johnstone, T. B., Esq., *Assistant Surgeon.*

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Kirk, R., Esq., *Assistant Surgeon.*

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McKenzie, J., Esq., *Assistant Surgeon.*
McKenzie, G. J., Esq., *Assistant Surgeon.*
McLennan, J., Esq., *Surgeon.*
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Milligan, S. D., Esq., *Assistant Surgeon.*
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Osborn, S., Esq., *Assistant Surgeon.*
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Peet, J., Esq., *Assistant Surgeon.*
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* Rocke, D. P., Esq., *Surgeon.*
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Style, M., Esq., *Assistant Surgeon.*

Tawse, A., Esq., *Superintending Surgeon*
* Taylor, W. B., Esq., *Surgeon.*
Thom, W., Esq., *Assistant Surgeon.*

Thompson, M., Esq., *Assistant Surgeon.*
Thomson, A. S., Esq., *Assistant Surgeon.*
Trestrail, J. E., Esq., *Assistant Surgeon.*
Turner, J., Esq., *Assistant Surgeon.*

Vaughan, J., Esq., *Assistant Surgeon.*

Walker, A., M. D., *Assistant Surgeon.*
Waller, T., Esq., *Assistant Surgeon.*
Ward, T. W., Esq., *Assistant Surgeon.*
Weston, C. J., Esq., *Assistant Surgeon.*
Wight, R., Esq., *Supt. Surgeon.*
Winchester, J. W., Esq., *Assistant Surgeon.*
Woosnam, R., Esq., *Assistant Surgeon.*
Wright, A., Esq., *Assistant Surgeon.*

Young, E. J., Esq., *Assistant Surgeon.*

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J. P. Jackson, Esq., *Bengal Establishment.*
W. Middlemas, Esq. *Assistant Surgeon, Madras Establishment.*
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Captain Shortrede, *Superintendent of the Trigonometrical Survey.*
Dr. Prunel, *Chief Physician to the Military Hospital, and Professor in the Medical College at Cairo.*
M. M. J. Desjardin, Esq., *Secretary to the Society of Natural History in Mauritius.*
Sir George Ballingall, *Professor of Military Surgery, Edinburgh.*
Dr. Laidlaw, *Alexandria.*
R. H. A. Hunter, Esq., *Staff Surgeon H. M.'s Service.*

Errata.

Page.	Line.		
17	11	*for* "brought"	*read* "bought."
27	17	*for* "preservations"	*read* "preservatives."
60	28	*for* "peritonal"	*read* "peritoneal."
219	12	*for* "Dr. Jackson"	*read* "Dr. Johnson."

Patch, J., Esq., *Surgeon.*
Peart, J. H., Esq., *Assistant Surgeon.*
Peet, J., Esq., *Assistant Surgeon.*
Pigou, W. H., Esq., *Assistant Surgeon.*
Pitcairn, W., Esq., *Assistant Surgeon.*

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22/11/89

BRITTLE JOURNAL: This volume should remain in the stacks until a procedure for brittle journals is established.

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